OP SPOT — By Bernard Allen

Overcoming conversion problems

WHEN a site converts from one machine to that of another manufacturer the process can be a disconcerting, almost traumatic, experience for the operations staff.

After years of working with a well-tried and trusted system, they are suddenly confronted by new hardware and software, and all the jargon and terminology associated with the new machine.

Add to this the fact that DP management often considers the conversion process to be a purely systems and programming matter, and it becomes clear that the operators are faced with a very difficult situation.

Now to experienced operators the change in hardware will not present much of a problem, but the new operating system with its different concepts and facilities will call for greater effort and study on their part.

They must insist on being sent on a basic appreciation course, followed closely by one more advanced in content, well before the new machine is actually installed.

After this the operators must take matters into their own hands and make an effort to get in touch with the appropriate user groups.

These groups are very useful as most maintain a so-called skills register, in which the experience of all the members is pooled.

Many allow first-time users to join their ranks before the machine is actually installed, so that the new members get a full run-down on the problems they are likely to encounter.

Some, such as the Operations Group of the IBM Computer Users' Association, help the operations staff to get acquainted with the new system. Sometimes staff are taken to other sites where they receive a thorough training.

Back at their own site, the operations staff must persuade the management to give them a say in how the conversion programme is planned and executed.

They must insist that at least two of the operators are used in the conversion team in order to work closely with the systems and programming staff.

Those operators would be responsible for the scheduling of all the testing work and helping to produce documentation of a sufficiently high level. They would, of course, keep the rest of the operators up-to-date about all new developments.

Management must be lobbied into hiring the services of contract operators to cover the period during which the old machine is phased out of use.

Under the supervision of a senior operator or a shift leader, the contractors can then be employed to run the old machine, leaving the permanent staff free to transfer over to the new machine.

Of course, at first the workload placed on the new machine will be very light, and the staff should take advantage of this in order to consolidate and improve their knowledge of the system.

During this period the shift leaders must ensure that all the operators are able to load the system, and that everyone is able to take diagnostic action quickly and efficiently.

Also it is a good idea for all the operations staff to run small jobs of their own on the system in order to get accustomed to the job control language.

If the jobs fail, all the better. The operators will learn something about the JCL errors and system codes, and this will prove to be of considerable value later on.

As the workload increases, the staff should monitor the major applications to see that the documentation and restart procedures are up-to-date from the operations viewpoint.

Their ideas and opinions must be relayed to the systems and programming staff via the operators who are directly involved with the conversion team.

They have to bear in mind that they, and not the programmers, have to live with badly written systems.

In some cases the conversion process may be followed by a change in the shift pattern employed at the site, from two to three shifts for example, and this will pose a difficult problem for the management who will have to recruit additional staff.

At what grades should the new staff be employed? On the one hand the management must be loyal to the existing staff, while on the other they must recruit operators with enough knowledge of the system to be of immediate use.

To prevent friction among the operations staff, the management would be well advised not to take on staff above the level of senior operator. At the same time, the new staff should not be expected to use their experience to give advanced training and to help those on higher grades.

HINT OF THE WEEK

Beware hardware errors

THIS week's hint points to the need for operators to be alert to hardware problems.

Hardware errors which occur on disc drives can be serious and expensive both in terms of lost machine time and money costs.

If a drive has damaged read/write heads, any disc placed upon the unit will be made defective.

Should that disc then be mounted on another disc drive, that also will be ruined, and so on.

Disaster.

So in the case of hardware errors on disc drives, the operators must be sure to inform an engineer or the operations manager. In this way any serious problems may be avoided.

That £5 offer still stands

IT seems to me that most operations staff must get a pretty good salary because a couple of weeks ago I offered £5 to anyone who has a hint published in Op Spot. And as yet nobody has taken me up on it.

The offer still stands. The hints may be technical or non-technical in content, but please be sure to state your name and that of your company clearly, giving a telephone number on which you may be contacted during the day.

NatWest night-shift transport not good enough, says NUBE

TALKS are taking place between the National Union of Bank Employees and the National Westminster Bank on two matters concerning operations staff: safety and the calculation of shift allowance.

Concerned for the safety of its members working at the bank's centre in Lemen Street, London E1, the union continues to press for the provision of transport to take staff home at the end of evening and night shifts (Op Spot, March 16).

Already the bank is providing the facility for its Asian staff who were transferred to the centre from the bank's Woolgate House site.

Now the union understands that the bank intends to provide a modified version of the service for all its other shift workers at the site; they will be taken from the centre to a fixed point outside the immediate area.

The union points out that such a service would be of use only in relation to the evening shift and would be no help to staff in the case of the night shift finishing early. It calls for flexibility by the bank.

On shift allowance, the union wants the implementation of a points system by which the allowance is calculated in accordance with the social hours worked by staff. The bank has agreed in principle.

Training booklet

OPERATIONS training specialist Infotech Operations Ltd has published a booklet which outlines the courses they run for operators and operations management. The Operations Training booklet July-December 1978 is available, free of charge, from John Blake, Infotech Operations Ltd, Nicholson House, Maidenhead, Berks. Tel: Maidenhead (0628) 35031.

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The Kim 1 microcomputer and the Pocket Terminal, with a television set being used for display and a cassette recorder for back-up storage.

Commodore extends Kim's range

HARDWARE additions have been announced for the Kim 1 single-board microcomputer, providing it with a television interface, extended memory and a full keyboard in a pocket-size case. The Kim 1, made by Commodore, is based on a MOS Technology 6502 processor chip and costs £177 including power supply.

The keyboard, called the Pocket Terminal, is a standard Ascii teletype replacement terminal in the shape of a calculator, with 40 dual-purpose alphanumeric keys and an 8-character LED display. It can plug into the Kim as an adjunct to the hexadecimal key-pad, and costs £240.

The video board allows a domestic television set to be used as a display, and costs £150.

The memory plus board costs £199 and provides an extra 8K bytes of RAM.

Various software packages are also available for the Kim 1, including an editor and assembler called Micro-Ade, an information retrieval package, a mailing list program and a chess playing program. Most of these cost £12.

Hornby puts models on micro rails

IN a move that could herald the greatest change in electric model railways since two-rail power pick-up was introduced, Hornby Hobbies are planning to launch a microprocessor-based control system.

Named Zero-1, it is based on a 4-bit chip that was developed specially for the application and the system is due for release in mid-1979.

The basic controller will control the movement of up to 16 locomotives and up to 40 electrically-operated points or signals with only two wires. A 20 volts AC output has been chosen in preference to the standard 12 volts DC, as the AC mode gives better current collection.

The secret of Zero-1 is that power control takes place in the locomotive, not at the rails. Each locomotive will carry a chip placed between the pick-up and the motor. The chip not only converts the AC current back to 12 volts DC but also acts as a speed and direction controller.

Each chip has a user-assigned call sign and up to 18 codes can be used to control locomotives, points, etc. Constant train lighting is also provided even when the train is at a standstill. Additional slave units can be added at £10 each. Chips are expected to cost about £5 and the main controller £30.

Most shops that Computer Weekly spoke to thought the Zero-1 a good idea but, as with most products from the Hornby Hobbies stable, they would prefer to "wait and see" before passing judgment.

The maximum configuration specified for a single controller would cost about £130. However, one model shop proprietor, Bob Wyatt of Wyatt and Tizard, Greet, Birmingham, said that a traditional system for the same configuration could be supplied for about £30.

Wyatt added that three locos were the most that any child was likely to own, so there was the question of costs to the customer. He was certain that serious modellers and model railway clubs would be interested, but they were numerically very much in the minority.

Hornby Hobbies brand manager, Jim Kedge, said that using Zero-1 would mean a saving in cost of labour and wiring on a traditional system. This would make Zero-1 about the same price but it would do much more for the lay-out.

Zero-1 is to be demonstrated at the Festival of Model Railways Exhibition, August 24 to September 2, at the Central Hall, Westminster.

MICRO NEWS

Low-cost TV games from GIM

LOW-COST cartridge programmable TV games are being made up for the Christmas market by OEM buyers of General Instrument Microelectronics System 8601 chip set.

Consoles are based on the AY-3-8015 interface chip, which needs only a clock crystal, UHF modulator and power supply to put games on to a colour TV screen. The chip handles all push-button selector and joy-stick control signals to the games cartridge. It sells for £2.75.

Each cartridge contains a single games processor chip which is wired to a robust edge connector. Chips contain up to 24 games and the series includes a motor-cycle set and a road race set.

Further sets of games are currently going to OEMs in sample quantities and should be in full production within the next two months. These are the 8605 Warfare chip with 10 games, the 8600 Wipeout with 24 games and the 8607 Target with 12 games.

Prices are around £6 to £8 in 100-up quantities.

For checking cables

AUTOMATIC monitoring systems for air-pressurised telecommunications cables, to be marketed by Drallim Telecommunications of Bexhill, can check up to 2,250 transducers for sensing air pressure and flow rates to ensure that moisture does not penetrate and harm circuits.

The series 5300 monitors are based on Intel 8080 microprocessors and will be marketed in Western Europe, Central and East Africa, the Gulf States and the Caribbean under an exclusive agreement with the US manufacturers, Sparton Southwest.

Drallim produces specialist cable protection equipment and counts the Post Office and British Rail among its customers. It recently beat 22 rivals to a £200,000 order from the Indian government.

A similar agreement with Pure Gas Australia covers Australasia and the Far East, while Sparton itself covers the US and South America.

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COMPUTER WEEKLY
International
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THURSDAY, AUGUST 3, 1978

INTERNATIONAL BRIEFING

Canada turns to graduates

A SURVEY of professional job vacancies in Canada has shown that experienced systems analysts and programmers are the most sought-after staff there. The total number of professional vacancies increased in the second quarter of 1978 over the first in Ontario (7.9% increase) and Quebec (5.5%) but not in other provinces.

The survey said government incentives to encourage research and development appeared to have had little effect on professional vacancies. Shortage of some staff had forced employers to hire new graduates instead of experienced men and women.

BABS extended

TO pick up more passenger business in the Middle East, British Airways is extending its BABS online reservation system to the Gulf States. The airline is installing a total of 41 display terminals and 15 printers in sales offices and airports in Bahrain, Dubai, Abu Dhabi, Doha and Kuwait at a total cost of £195,800.

Insurance deal

UNDER a contract worth about $10 million Computer Automation is supplying Continental Insurance offices all over the US with its Syfa business system. This deal follows a $5 million contract signed about 18 months ago with another US insurance firm, Fireman's Fund American Insurance, a subsidiary of American Express, which involved about 50 Syfa systems (CWI, January 13, 1977).

Extended by 45

THE Belgian airline, Sabena, has extended its passenger and hotel reservation system, Saphir, to 45 leading travel agents in London. They are now linked to Air France's Univac system in Paris on which Saphir runs, via Travicom, the system that enables agents to access the reservation systems of most major airlines.

Travel link

FIBRE optics systems manufacturer Spectronics Inc of Richardson, Texas is being taken over by Honeywell. The acquisition has been approved by the boards of directors of both companies and is expected to be completed in late August. Spectronics is not linked in any way with the UK firm, Spectronics of Poole, Dorset which builds portable telex devices.

Quarterly results

IN the financial results for the first quarter, ended June 30, of its current financial year, Computer Sciences Corp has reported net profits of $3,859,000 — up 23% compared with the same period last year.

Support centre

HARDWARE, software, engineering and training support for the European subsidiaries and distributors of terminal manufacturer Harris Data Communications is being provided by a European support centre just set up in the UK.

First two ICL 2950s in Holland

THE first two ICL 2950 mid-range mainframes in Holland are to go to a big department store and to a mail order company, Ter Meulen BV of Rotterdam. Ter Meulen already has 42 terminals attached to two ICL 1903As, and the new machines are to take over the online mail order processing handled by the 1903As, and development of a new stock control system which will enable it to reduce stock levels of the 70,000 items in its catalogues.

It mails catalogues to its 1.5 million customers 17 times a year, and maintains the address list on the system.

The machines, each with one Megabyte of main memory, will be installed in the middle of next year, and are worth £780,000 altogether.

● ICL managing director Dr Chris Wilson is pictured looking on as the contracts are signed by Dr E. H. S. Ter Meulen (centre), director of Ter Meulen, and Dr J. S. Elterbrook, general manager of ICL Holland.

International services policy body to be set up

TO provide a worldwide forum for communications between computer services companies and governments, an international policy committee is being set up by the European Computing Services Association, the Japanese Software Industry Association, and the US Adapso.

Announcing this, Adapso vice-president Jerome Dreyer said, "This committee will offer the platform for confronting such issues as transnational data flow, privacy and security, and business competition."

Dreyer added that following the success of the first World Computing Services Congress in Saratoga (CW, July 9) a second congress is planned for 1980 or 1981.

Two word processor manufacturers to merge

TWO major international makers of word processors, Wordplex and AES, are to merge in an operation that involves both being bought by the Canada Development Corp, the Canadian equivalent of the NEB.

Both companies have roots in Canada. AES has always been based there and Wordplex is owned by the Toronto venture capital company, Venturetek. The new operation, to be called AES Wordplex, will have an integrated sales force, while keeping the two existing product lines.

Wordplex makes a compatible range of stand-alone and shared-logic machines, while AES makes only stand-alone screen-based units fairly low-cost, but with many sophisticated features and options such as OCR input.

Harry Mallinson, managing director of Wordplex in the UK and managing director-elect of the joint UK company, feels the two ranges of stand-alones are compatible because some customers are interested in future upgrading to shared-logic while others are not.

Both product lines will be sold in the US by Lanier, which is principally a dictating machine concern but has been handling AES. Dennison, which currently markets Wordplex in the US, is pulling out altogether. In Canada, the existing AES sales force will sell both lines.

The Canada Development Corp was started with government funds but is now selling off its shares completely to the public. It is paying $35 million for the two companies, plus additional payments of up to $25 million, based on performance.

The joint company should become a powerful force in the intensely competitive field of word processing. Most of the firms at the moment are having difficulty making ends meet. It is only recently that a UK firm, Dataplex, went bankrupt (CW, June 8).

Wordplex, over the past two years, has been having discussions with more than one company over possible mergers. Both Wordplex and AES have been eyeing each other for some time.

Mallinson sees AES Wordplex in a good position to fend off the assaults of giants, such as IBM and Xerox, when they eventually start to move into advanced word processing in a big way. Their installed bases of hard copy machines are big inhibitions, he feels, and with the time it takes to get into marketing word processors, AES Wordplex's head start should be a considerable advantage.

The combined firm will have five factories where the hardware for the systems is assembled, four in Canada and one (Wordplex) in California. It claims to have 9,000 WP screens installed worldwide at present, of which 5,000 are AES stand-alone units. Turnover for this year is expected to be $70 million.

CII-HB falls behind ICL

LATEST turnover figures from CII-Honeywell Bull indicate that the Franco-American company has just been overhauled by ICL of Britain in volume of business done.

In the half-year to June 30, 1978, CII-Honeywell Bull had turnover of 1.849 million French francs, about £219 million, whereas in the half-year to March 31, ICL's turnover was £282 million (CW, June 1). Turnover was up 12% over the same period last year; ICL by comparison registered growth of 23%.

CII-HB's turnover benefited from a 137.5 million francs subvention from the French government in the period, almost halved from the 235.4 million francs it was granted in the first half of 1977. Like ICL, CII-HB did 51% of its business outside its domestic market. Profits after tax for the period were 71% up at 71.8 million francs.

'Sperry Rand may shun Soviet trade'

THE decision by President Carter to deny Univac an export licence for the 1100 series mainframe ordered by the Russian news agency, Tass, has left Sperry Rand chairman and chief executive J. Paul Lyet puzzled. He indicated that the company might cease seeking business in the Soviet Union.

"If presidential approval is to become a routine part of the export approval process, we may find we can make better use of our efforts elsewhere," he said.

Lyet also questioned President Carter's statement that the proposed sale represented a "quantum jump" in processing power for the Soviet Union, pointing out that the proposed machine, a low-end 1100, was comparable in power to the 1106-II already approved and installed with Aeroflot for international passenger reservations.

Although there is little question that the licence was denied in response to Soviet treatment of dissidents, notably computer scientist Anatole Scharansky, this has not been formally stated. While industry figures, including Control Data chairman William Norris, have criticised President Carter's decision, it has been applauded by US industry bodies such as the Association for Computing Machinery and the Association of Computer Programmers and Analysts.

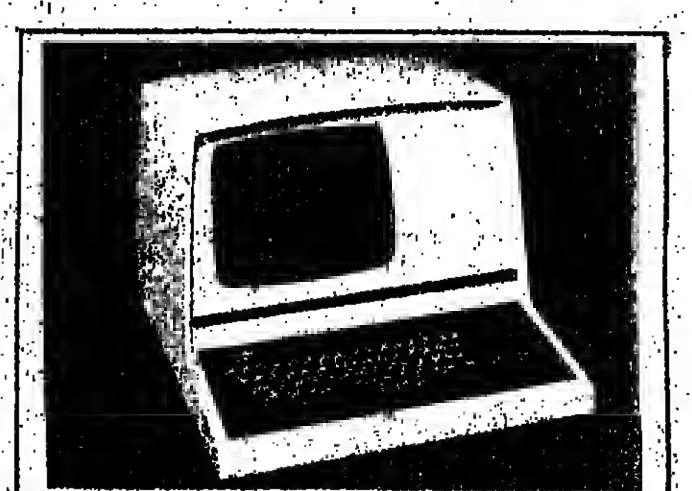
Italian low-cost access to US databases

LOW-COST access to large scale databases in the US is being made available to terminal users in Italy by the Italian international record carrier, Italcable. It has installed a Tymsat network concentrator at its Rome office that will be linked to the Tymnet network in the US once approval is received from the Italian Postal and Telephone Administration.

The database service will be called Direct Access to Remote Databases Overseas, Dardo, and will be similar to the service introduced in the UK early last year by the UK Post Office. The UK service uses the Telenet network as well as Tymnet to gain access to the US databases.

Australian hospitals system

SIX Australian hospitals are developing a patient reporting system for pathology departments based on Data General Novas and software originated by Monash University, Victoria. The results of tests from the biochemical and haematological laboratories are fed into the system on VDUs and cumulative reports on each patient are printed, together with ward reports. Hospital officials say that clerical work and the volume of paper records have been greatly reduced. Eventually, a total laboratory system will include results of all tests.



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Corporate forts in the posh district

NEW YORK'S upper Madison Avenue has always been a posh neighbourhood, lined with small expensive shops and the offices of impressive corporations. IBM, for example, has held forth on the south-west corner of Madison and 57th Street for many years.

Now, however, IBM is demolishing its ageing edifice, an uninspired building equipped with a street-level exhibition area, and building a 603-foot skyscraper.

Not to be outdone, American Telephone and Telegraph has assembled a lot just one block away, at Madison and 56th Street, on which will rise its own castle, 648 feet high.

The IBM building, seen from the top, will be a square tower with a large corner lopped off. In a style typical of recent New York construction, the building will rise to a flat top. At the street level the rectangular lot will be covered with a glass-enclosed garden, likely to serve as a significant public facility.

Unlike IBM, AT&T's structure is reportedly ornate, with gothic arches at the base and a shaped top. The AT&T building will be faced with pink marble, while IBM's will be grey-green. Both buildings will be rising from white marble pavements.

Between these corporate forts there will be open spaces and low structures, permitting the two companies' executives to keep an eye on each other.

Presumably, IBM's building will feature a rooftop aerial link to the SBS satellite. AT&T has made no mention of a very long wire to cap its tower.

NEWS FROM AMERICA
BY
HESH WIENER
AND
CAMERON DAVIS

IBM 'decline' impresses Wall St

WALL Street is always something of an enigma. Often it is difficult to separate insight from superstition, or brilliance from dumb luck. Take IBM's quarterly report, for example. It impressed analysts who had expected very poor results, but was an unimpressive showing for the computer giant.

The company said its profits climbed five per cent. But taking account of inflation, this represents a decline. Yet its shares rose by 8½ points in trading after the figures were released.

The reason for the rally was the expectation that IBM's earnings would show a numerical decline from the second quarter of last year. The market had discounted IBM's share value below what was considered a fair market price.

It is also widely believed that this quarter marks the end of slow growth for IBM as 303X mainframes and a host of smaller new products reach customers.

There are also good reports from technical analysts, those stock experts whose projections are based on financial cycles. Indications from one prestigious broker, Drexel Burnham Lambert, are that IBM and other office equipment makers will have good performance from their shares in the short term.

Despite this seemingly good news, the last two quarterly reports from IBM plus the announcement of the advanced communications service by AT&T may create some uncertainties for IBM and, by implication, other less powerful computer manufacturers during the coming months.

The impact of the 303X series on orders for older equipment was not as severe as that of the 360 or 370 series. Nevertheless, the 303X machines can hardly be called revolutionary. What, then would the announcement of a new generation do to orders for older equipment?

Suppose, as several industry observers have postulated, that there is an H series of ultra-powerful processors under development at IBM's data processing division.

If the various press reports bear out, IBM will unveil in advance some less powerful, but equally advanced, computers referred to as the E series.

One can hazard a guess that if two weak quarters resulted from early 303X deliveries — most Wall Street analysts believe that IBM will show substantial earnings gains during the remainder of 1978 — three or even four weak quarters could come about with the announcement of an E series and, several months later on H series.

Other IBM office products, such as word processing devices, are also coming under increased pressure from old rivals and new entrants, such as Exxon.

Where, then, will IBM get the sales it needs to continue its historic growth? Terminals present one great opportunity and small business systems another. However, in both those markets there is burgeoning competition and, particularly in terminals, an opportunity for AT&T, various Japanese electronics companies and much smaller US manufacturers to improve their market penetration.

On May 19, an International Data Corp newsletter published the results of a study of the prospects for plug-compatible mainframes which said that these machines could "account for some 20% of IBM's installed base" of 303X and 148 and above 370 machines by 1980. This could easily add up to 30% of IBM's sales.

But Wall Street believes in results, not possibilities, and the results have been gratifying to investors. Drexel Burnham's technical stock analyst, David Upshaw, revised his previously bearish opinion of the office equipment group, including IBM.

The question for investors is not so much whether users will buy computers, but whether they will buy today's offerings to allow their installations so that they can enter the next generation.

The corresponding question for the major manufacturers, particularly IBM, is whether there should be a clearly differentiated next generation at all.

It may be that even IBM, with its revenues approaching $20 million a year and its cash level at $5,000 million, cannot afford to repeat its 360 gamble because, win or lose, the shock to investors around the world would force the giant to weather a storm of discontent.

The romance of computer crime

WHILE toy stores still feature electric trains and animated bears with their jerky, repetitive motions, characteristic noises and mechanical — and therefore tangible — innards, a new genre of amusements, built of silent and motionless electronic components, has arrived.

The computer itself, which has inspired some of these games and served as a host for them as well, is perhaps the ultimate toy for the technologically-inclined. Some of the games played with computer are not, however, mere amusements but crimes.

The public fascination with things electronic, including computers, and with human depravity, has now inspired a book on computer abuses that is literate and enjoyable.

Among its readers will be computer professionals, and among that group perhaps a few who at one time or another wondered whether they might be able to achieve what the subjects of Computer Capers almost got away with: the perfect computer crime.

Some of the cases in Computer Capers, published in the US by Thomas Crowell Co of New York, involve the execution of a common fraud with the aid of a computer. The machine makes such frauds far more fascinating than similar crimes executed with pencil and paper. And, because computers are often used to run vast financial empires, data processing frauds involve enormous sums of money.

Author Thomas Whiteside, a journalist on the New Yorker magazine, has selected a few cases as examples, and refers to many others in passing. His study of mischief carried out within the confines of a machine was part of a series of articles in New Yorker.

In some cases, such as the Equity Funding affair, Whiteside found ideas that previously appeared in literature, such as Nicolai Gogol's novel, Dead Souls.

Computer Capers is really a book about man's relation to the computer — or at least the dark side of that uneasy marriage. If the criminals described in the slim volume ever become folk heroes, in the tradition of Jesse James or Robin Hood, credit for that canonisation belongs to the author.

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Attorney warns: Don't arbitrate

IN a spirited essay published in the June edition of Computer Negotiations Report* Thomas Christo calls most contract arbitrators "flunkies" and advises disgruntled users to pursue their discontent in the courts.

Christo, the Boston attorney who fought for buyers in the Catamore case against IBM, the Colorado Blue Cross dispute against Honeywell and the Shaefer Brewing suit against Electronic Data Systems, believes that users who have been sold a bill of goods can get compensation via the courts.

Many such disputes are submitted to binding arbitration, a practice that Christo believes is biased in favour of the vendor.

Christo, who was one of the founders of the weekly newspaper, Computerworld, and who later served as one of the newspaper's editors, studied law and set up his nationwide practice in Boston.

His clients are often buyers of computer equipment and services and his dynamic court-room tactics have won him the admiration of many disappointed users and the respect of vendors.

Stating that the arbitrators to whom a user would entrust a dispute would no doubt be drawn from the data processing profession, Christo argues that most of them are not particularly competent.

They "sign up for the American Arbitration Association's list because they have little else to do. While there are obviously many very capable and erudite members, there are also an incredible number of flunkies."

He goes on to say that arbitrators tend to blame the user for difficulties, while the industry has matured to the point where vendors should be able to provide equipment and services that truly meet the user's needs.

Christo also believes that the public spectacle of a jury trial, while potentially embarrassing to the user, is actually more humiliating to the vendor.

*Computer Negotiations Report, $195 per year, International Computer Negotiations, Inc, 1831 Palmetto Avenue, Winter Park, Florida 32789, USA.

Datacoms net for US banks proposed

A PROPOSED private voice and data communications network that would be shared by the 14,000 banks in the US is one of the developments discussed in a report on data communications and banking* now available from the US consultancy, International Resource Development Inc.

The report also looks at the five areas in which electronics funds transfer systems are being implemented or considered in the US. These are automated teller terminal operations, point-of-sale and credit verification networks, wholesale funds transfer, Giro-type composite billing services and automated clearing house networks.

In the last area, the 25 clearing houses in the US are now being linked by a data network that will enable a cheque issued in, say, San Francisco, that finds its way to, say, Cleveland, to be cleared by computer communication between the clearing house at Cleveland and the San Francisco clearing house.

The network is being implemented under the aegis of the Federal Reserve Bank, the US equivalent of the Bank of England.

In the point-of-sale area the report points out that 17 million cards have now been issued in the US that provide immediate debiting of consumers' bank accounts at the time of purchasing an item.

Although the report is primarily about US banking it discusses the Giro services provided in Europe, but concludes that composite billing services of the Giro type will develop slowly in the US.

The proposed private network for the 14,000 US banks would be leased from the US telecommunications giant AT&T and its main purpose would be to save money by sharing lines for voice and data communications.

The feasibility of the network is now being studied by AT&T and the American Bankers' Association. It will most likely take a form similar to that of the international airlines private network, Sita.

The existing message switching wholesale funds transfer systems, Fed Wire, which is run by the Federal Reserve Bank, and Bank Wire II, operated by the independent Bank Wire Association, will both probaby be integrated with the proposed network.

Another prediction made in the report is that large banks in the US will grow in dominance through EFTS because they can support large staffs of technical experts to develop EFTS and will be able to make EFTS services available to their correspondent banks in small towns.

Correspondent banks are smaller banks with which the big banks have arrangements to provide special services and they are likely to benefit from EFTS at the expense of small and medium sized independent institutions.

Looking at the effect of EFTS development on the computer equipment industry, the report sees modem sales declining because of the use of digital data networks, while banking terminal sales, not surprisingly, are expected to remain very strong. Current sales are $300 million in the US alone.

The report also looks at the expected impact of electronic mail and satellite communications networks on funds transfer, both domestically and internationally.

*Data Communications in Banking. 187 pp. $795. International Resource Development Inc, 125 Elm Street, New Canaan, Connecticut 06840, USA. Tel: (0101-203) 966 5615.

System Aid for judges Down Under

Software developed by UK software house System Aid helped in a recent produce competition (pictured left) run by the Royal Agricultural Society of New South Wales. The system, Resultmaster, was used to handle the complex marking system needed to judge a vast quantity of fruit, vegetables, wine, and agricultural produce.

Resultmaster is part of the Checkmaster system run by the society on its ICL 2903.

IBM poised to lead desk-top market

A RAPID growth in sales of business desk-top computer systems will make IBM the leader in the desk-top computer market over the next few years, according to a study * now available from the US consultancy, Venture Development Corp.

The study predicts that sales of all types of desk-top computers will grow from $243 million in 1977 to $1,800 million in 1983, and that the percentage of total sales accounted for by machines for general purpose business applications will grow from 25 per cent in 1977, to 43 per cent in 1983. The report points out that IBM has its greatest strength in the business segment of the desk-top computer industry.

VDC does not foresee IBM's dominant position extending into the engineering and scientific desk-top market, but predicts that this will grow by a much lower rate over the next five years than the business systems market — by 31 per cent a year compared with 52 per cent.

Apart from IBM, the three other leading desk-top computer suppliers are Hewlett-Packard, Tektronix and Wang. The four together, according to VDC, account for 93 per cent of the total market at the moment.

VDC defines a desk-top computer as a complete microprocessor based system selling for less than $10,000.

*Desktop Computer Markets. 150 pp. $950. Venture Development Corp, 1 Washington Street, Wellesley, Massachusetts 02181, USA. Tel: (0101-617) 237 5080.

Now parents can curb children's TV with micro 'censor'

PARENTS worried about the effects of television on their children will soon have technology coming to their aid. A US husband and wife have devised a microcomputer-based censoring device that attaches to the TV set and cuts out all programmes except those the parents have approved of.

The "video proctor" is connected in between the aerial and the set, with a lock so that it cannot be removed by unco-operative offspring.

The parent keys in the day, time, channel, and duration of each programme that is acceptable; a choice of more than one programme at any given time is possible. Then the proctor filters out all programmes that have not been specified.

The unit resembles a pocket calculator and contains a microprocessor, a clock, and a tuner to separate the channels, working on both VHF and UHF. It is expected to cost around $160.

Ray and Joanne Dobson are the inventors: he runs an advertising agency, she is a lecturer on "The impact of television."

They are sub-contracting out the production of the video proctor, and hope to have the first batch in four months.

According to Dobson, interest in the machine in the US is high. It will screen out not only broadcast TV but cable TV, video games and other distractions that are proliferating in American homes. There is particular concern about cable TV, he says, because those stations have taken to broadcasting pornography in a big way.

He also claims that the proctor can save money: "because of all the junk that is sold to children on television these days."

The Dobsons approached several manufacturers of TV sets to see if they would like to build it into their sets. At first they were lukewarm to the idea because it would cut down the usage of sets and make them last longer. Now, however, some are "coming out of the woodwork," convinced of the market potential of the machine.

The Dobsons are hoping to sell the proctor in the UK soon, as well as the US; they feel there is a big market for it here too.

Telephone hand sets are part of the furniture

IN the US, you may buy your own telephone instrument and, once you or the manufacturer of the instrument have met certain specifications, install that instrument in your home or office.

As a result, independent companies have increasingly sought part of the telephone instrument market by designing unusual cases for their products.

A report* on the retail market for telephone instruments, includes a study of this market. The report states that $115 million will be spent this year on independently-made telephone hand sets and that by 1982, Americans will spend between $540 million and $660 million for such equipment.

Among the other items that will become more common are the obnoxious automatic diallers that play an advertisement to the called party when he or she answers the phone.

The book, which describes the business of filling a world with machines that, once installed, spend their days and your money making senseless calls to other machines, is the first concise explanation of this burgeoning electronics market.

*Opportunities for retailers, selling telephone and related devices, $75. Harry Newton's Telecom Library, 3 Sheridan Square, New York, 11014, USA.

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ICL 1500 for the communications era. The significance of these enhancements, together with other hardware and software enhancements (COBOL is now available) is that ICL 1500 now has a powerful interactive capacity.

For example, ICL 1500's linked to a central computer, could take over the menial chore of data validation at the point of transaction. They'd save expensive mainframe time and improve accuracy.

Or ICL 1500's could be used as local processors, for example with a telephone ordering service, and access the central computer for information not held locally.

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CW3

Project Prelude opens doors to office of future

The acceptability to the business community of integrated satellite communications services, such as the "automated office", electronic mail and teleconferencing, was shown to be more than a salesman's dream by the Project Prelude experiment, carried out by Satellite Business Systems. For Project Prelude, SBS, which is jointly owned by IBM, Comsat and insurance company Aetna Life, provided the first US link-up of business equipment with high-speed satellite communications channels for voice, data, facsimile and teleconferencing. Users in the experiment included Rockwell, Texaco and Aetna Life itself and the results showed considerable enthusiasm for the services (CW, July 13). In this article, Boston-based communications expert MORRIS EDWARDS looks in detail at Aetna's Project Prelude experiences, and at analyses by other companies of the way in which the automated office of the future might be implemented.

FOR its teleconferencing evaluation in Project Prelude, Aetna used a satellite link between its headquarters in Hartford, Connecticut, and its Chicago office. According to John J. Donovan, Aetna's director for corporate data processing support, the evaluation had four objectives: to assess the cost/benefit potential of such advanced communications services and opportunities for increased productivity; to increase user awareness of communications alternatives created by emerging technology; to determine likely costs and schedules for the new services; and to evaluate satellite communications and associated terminal and other equipment.

In a series of two-hour sessions, various departments and interested persons from Aetna's home office and Illinois operations conducted departmental meetings and training programmes to evaluate teleconferencing's potential for marketing, administrative and instructional activities. Donovan noted that marketing, training and administrative functional areas were equally represented among participants, as was each major operating division. Most of the people were from middle management, though there were several senior divisional and corporate vice-presidents.

In comparing teleconferencing to travel as a method of organising a meeting, 69% of Project Prelude participants viewed teleconferencing favourably, with training and underwriting personnel more positive, and marketing and administration personnel less so. Participants considered the most important advantages of teleconferencing to be saved travel time and the ability to have the "right" people more readily available. Saved travel expense and quicker decision-making were viewed as less important, as was the capability of getting more people involved in a video meeting than would be possible with travel.

Donovan reported that no one type of meeting surpassed others when respondents answered the question: What types of meetings do you think may be suited to teleconferencing? "Some felt only large groups would be ideal, while others felt only small groups," Donovan said.

"Marketing meetings to present new products or provide sales support were identified. Training sessions for technical or administrative employees, involving detailed form-preparation activities, as well as unstructured seminars or workshops requiring visual aids were mentioned. All sorts of general administrative meetings were identified, from planning to job performance review meetings."

In general, Donovan feels that teleconferencing can be used effectively in certain marketing, training and administrative activities to eliminate travel time and expense. "Taken by itself, teleconferencing may cost as much as, if not slightly more than, saved out-of-pocket expenses and lost executive time," he noted. "Real savings, however, will be achieved by re-applying otherwise lost travel time to more productive work, and by being able to do things not possible today.

"We expect the projected hourly use charges can be favourably reduced by exploiting new technology developments wherein video requirements are combined with voice, data and electronic mail needs in an integrated corporate communications facility. The overall benefits analysis is strengthened further as we move into the 1980s, when increasing personnel and travel costs are compared to electronic communications costs."

In their analysis of the office of the future, other insurance companies have also concluded that operating costs may not decline with the introduction of automation. Seymour Sternberg, vice-president of Massachusetts Mutual Life Insurance Company, for one believes that hardware and software costs will offset savings in secretarial and paper-related expenses, and operating costs may even increase.

Speaking on the office of the future at a recent meeting of the Life Office Management Association Systems Research Committee, Sternberg noted that "once hardware and software costs have dropped to practical levels, cost justification through direct savings will give way to arguments of faster, better and easier."

Sternberg believes that one of the most profound effects on the office of the future will be the need for closer integration of the responsibilities for data and voice communications.

"Most companies still separate their data processing organisation from the administrative function that handles telephone and mail communications," he noted. "As digital technology begins to be applied to voice signals, it will be necessary to draw upon the technical expertise of the data processing organisation. Furthermore, as the mail and filing activities of the office begin to merge into computer storage and transmission facilities, an integration will again be forced. Although some companies will attempt to transfer key data processing people to service the administrative organisation, most companies will find that an information services division, responsible for the processing, storage and transmission of digital data, voice and image data will be organisationally required."

The transition from today's office environment to the office of tomorrow will take the form of gradual evolution rather than a rapid revolution.

In another paper, Robert A. Shafto, senior vice-president of New England Mutual Life Insurance termed the office of the future a "merger of technologies, organisations and ergonomics."

In this era of heightened competition, cost control and efficient management techniques, Shafto stated, the life insurance industry in particular has little choice but to harness data processing, storage and communications technologies for its office functions, just as it has applied automation to much of its new business, premium collection, policy holder service and accounting functions.

As Shafto sees it, the challenge is threefold: to blend technologies involved with communications and data, word and image processing which, formerly, have presented piecemeal solutions; to integrate previously independent information reservoirs and unrelated organisations of the corporation, such as data entry and data processing with word processing, voice communications and records management; and to adapt tomorrow's office environment to the vast numbers of people that must make it work.

As candidates for automation, Shafto identified the functions of information capture, document creation, information search and retrieval, information routing, document formatting and outputting, work-in-process control, and personal services. He noted that much of the necessary equipment to automate the office is either currently available or in prototype form as discrete devices.

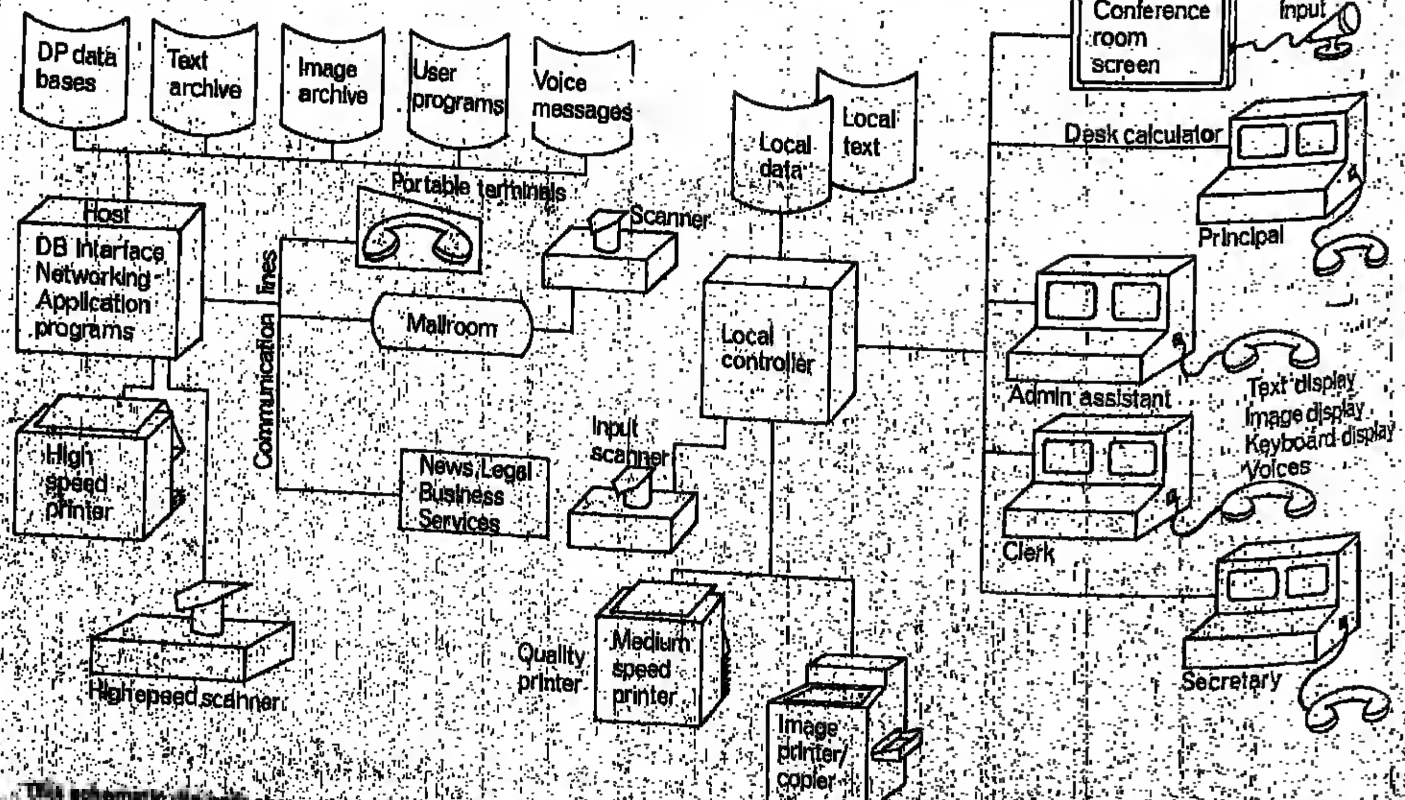
What is needed, he believes, is a solution to the problem of hardware compatibility and the development of software to support image storage, retrieval and transport, as well as to control work flow and to handle text processing requirements. "Since processing and storage will most likely be split between the central host and local workstations," he added, "host and local programming code must be compatible."

Shafto believes that the transition from today's office environment to the office of tomorrow will unquestionably take the form of gradual evolution rather than a rapid revolution. One problem, he feels, is the lack of understanding and definition of the "total office" requirements — a deficiency evidenced by the unco-ordinated attempts of computer, terminal, word processing, micrographics, copier, facsimile, photocomposition, dictation and communications vendors at partial solutions.

"Even among the giants like IBM and Xerox, which offer more pieces of the total office system than specialised vendors, there is internal disagreement about how all the elements should mesh," Shafto said. "Confused users will be forced to hedge, to make a 'creeping commitment' to their new automated office as appropriate products unfold and technologies merge."

Another factor facing the evolution will be the organisational impact of information technology. "Previously unrelated areas of the corporation — the mail room, the word processing centre, the telephone operation, space planning, the file room, the microfilm centre, the printing centre and the data processing department — must join hands in a co-ordinated approach," Shafto noted.

"Probably the single most important factor for the incremental electronic office, however, is the human engineering aspect. More people, in more departments, at more levels of the corporate hierarchy must interface with all sorts of terminal devices. Ergonomics, the science of harmonising people, environment and technology, will play a significant role in shaping the successful future office."



This schematic diagram shows the systems that would be used in the office of tomorrow, as envisaged by Robert Shafto of New England Life.

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Govt spends $36m on Privacy and Freedom of Information Acts requests

THIRTEEN agencies of the US government spent a total of almost $36 million over three years for processing Privacy Act and Freedom of Information Act requests, the US General Accounting Office has reported. During fiscal years 1975-77, GAO found, the 13 federal agencies handled some 147,000 PA and FOIA requests for information.

According to GAO's study, the number of information requests to individual agencies ranged from a high of 51,000 received by the Justice Department's Immigration and Naturalisation Service (INS) to a low of some 1,000 received by the US Postal Service's Inspection Service.

The three Justice Department agencies studied by GAO — the INS, the Federal Bureau of Investigation (FBI), and the Drug Enforcement Administration — accounted for about 66 per cent of the total number of information requests made to the 13 agencies. Those same three agencies incurred 45 per cent of the study group's total costs of compliance with the two Acts.

GAO also pointed out that the FBI spent well over one-third of total costs, or $13.8 million, over the three-year period. The number of information requests to the FBI totalled 43,366.

A breakdown of operating costs associated with the Acts shows that about 80 per cent went for salaries of personnel involved in administering the laws. Among the 13 agencies, those personnel numbered 630 (442 professional and 188 clerical) during 1977.

Other major cost items cited by the agencies were granting the access requests, accounting for disclosures, and publishing and distributing rules and notices required under the laws.

GAO cautioned that one major cost factor is excluded from the $36 million total. That is the cost of PA and FOIA law suits. The Department of Justice, which litigates those cases for the government, had 989 suits pending at September 30, 1977, a significant increase over the 706 pending cases on June 30, 1976.

The majority of the law suits relate to agency denials of requests for record access. Justice Department officials estimate that FOIA/PA litigations cost a total of $906,000 during fiscal years 1976 and 1977.

Of particular interest to the Senate Committee on the Judiciary, which requested the GAO study, is the audit agency's findings on the category of requesters (i.e., curiosity seeker, Press, researcher, etc.). While that information is difficult to obtain, particularly as the Acts do not require that citizens state their occupation, GAO said it was apparent from the agencies studied that the most dominant category of requesters was individuals who have been or are subject of investigations by the agencies.

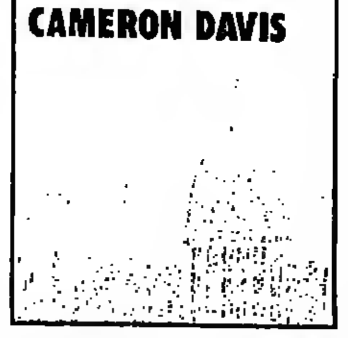
"Some of these requesters were also identified as being criminals," GAO's report said.

That finding supports the arguments of federal law enforcement officials who complain that FOIA requirements actually aid criminals and spies. For example, they claim, spies can obtain government files that detail methods employed in trapping or tracing suspects. Furthermore, they argue, it is possible for conspirators to forge a request from a cohort, and readily spot an informant if he does not have a file.

Additionally, the officials have testified in Congressional hearings, fear that records could become public has cut down the willingness of local police to send information to federal agencies and on the ability of these agencies to promise confidentiality to informants.

A legislative proposal being considered by both houses of Congress would require the government to inform citizens whenever it intended to look at their personal records held by a third party, such as financial institutions. The Bill would also give citizens the right to oppose such access before the records were turned over.

WASHINGTON REPORT
BY
CAMERON DAVIS



AT&T opposed as software vendor

THE Computer and Communications Industry Association has charged that AT&T's marketing of software, through its Western Electric supply arm, is a violation of the 1956 Consent Decree. That decree, entered into by the US government and AT&T, settled an anti-trust suit filed in 1949.

After months of prodding by the CCIA, the Justice Department recently put AT&T on notice that a formal investigation is underway.

CCIA's protest argues that the intent of the consent decree was to restrict Western Electric to the manufacture of products used directly in the common carrier network, and that while such equipment might be marketed to common carriers not within the Bell System, it was not to be marketed to other companies in the competitive private sector.

"To read the decree more broadly," CCIA contends, "would interpret the settlement in that anti-trust suit to expand, rather than to reduce, the Western Electric monopoly which the government was prosecuting."

To support its claims, CCIA points to pertinent sections of the decree which describe marketing areas allowable to AT&T. One section in particular reads: "[AT&T and Western Electric] are each enjoined from commencing, and . . . from continuing, directly or indirectly, to manufacture for sale or lease any equipment which is of a type not sold or leased or intended to be sold or leased to companies of the Bell System, for use in furnishing common carrier communications services."

AT&T's software showcase, as described in corporate marketing materials, includes "system programs" which monitor the overall operation of a computer system; "utility programs" which perform general purpose functions such as text editing and typesetting; and "applications programs" which perform specific engineering and scientific functions.

"Virtually none of this software is oriented toward using computers directly to provide common carrier communications services," CCIA contends.

In recent advertisements, AT&T mentions that it has over 300 software users in the US and 18 in foreign countries. But CCIA claims the company has close to 600 users of one product alone — the UNIX system.

Bell System literature describes the UNIX program as one that "effectively converts the DEC PDP-11/34, 40, 45 and 70 into a small-scale computer centre supporting up to 40 users."

According to the trade association, sales of UNIX, by itself, "make AT&T one of the largest computer software companies in the industry."

CCIA's charges were first presented to the Justice Department in an April 7, 1978, letter from CCIA president Jack Biddle to John Shenefield, Assistant Attorney General for Anti-trust. Months later, after the Justice Department "had neither acted upon nor responded to" the protest, CCIA opted to make the letter and accompanying documentation public.

"After this latest indication that the Department of Justice plans to do nothing more than carry out a charade of enforcement of the 1956 Consent Decree with AT&T," Biddle said in releasing the material, "CCIA has called upon the Congress to investigate the Department's failure to act."

Following CCIA's public outcry, a Justice Department official informed the association in a letter that a formal investigation has been initiated. Justice attorney John Wilson also apologised for the department's delay in the matter.

NBS to press IBM's I/O channel-level interface as standard

AFTER a cooling-off period of a few months, the US National Bureau of Standards has again mustered the courage to push adoption of the IBM-designed input/output channel-level interface as a federal standard (CW, July 27). And instead of capitulating to the fiery arguments launched by the standard's opponents, primarily the mainframe manufacturers, NBS has strengthened its proposal and tightened the implementation requirements.

By proposing a package of interface standards, rather than the individual I/O interface, NBS hopes the more complete offering will be more difficult to tear apart, a bureau spokesman explained. The package includes the I/O channel-level interface, an accompanying power control interface and, for the first time, a proposed channel-level operational specification for magnetic tape.

The proposals, if adopted, would constitute the first federal information processing standards that cannot arbitrarily be waived by individual federal government agencies.

To pacify the opposition's expressed concerns that the I/O interface could soon become, or already is, technologically obsolete, NBS says it will continually monitor the impact of the standards on federal computer operations. The proposals contain provisions requiring NBS review within three years of adoption.

Another attempt to appease the mainframers is NBS' invitation to representatives of the computer industry for participation in a Research Association Program to assist in developing interface standards for federal use. Under the program, individual companies or trade associations can sponsor technical experts to work at NBS with the Bureau's scientists.

Public comments on the proposed standards are due on August 18. An NBS spokesman says the bureau hopes to forward the package to Commerce Secretary Juanita Kreps late next month for final endorsement.

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Pocket terminal acts as a telephone for the deaf

A mock-up of SRI's "Deaf Telephone," an entirely self-contained miniature terminal that clips on to the handset of any telephone.

A POCKET-SIZE terminal, intended to let deaf people converse by telephone, is being developed by SRI, formerly Stanford Research Institute, under a grant from the US Department of Health Education and Welfare. The unit is self-contained, and includes a miniature alphanumeric keyboard, three-line display, acoustic coupler and battery power supply, all in a box measuring seven inches by five.

Being portable, the terminal could be used from a telephone kiosk. Since it uses a standard computer communications system, it could also work as a computer terminal, and therefore has a large potential market which would make it cheaper to mass produce.

The current design has a liquid crystal display, three lines by 12 characters, but a display of four lines by 16 characters is planned.

The signal is picked up from the receiver of the telephone by induction: this reduces the effect of ambient noise which is one of the drawbacks of acoustic couplers. However, the transmitter is driven acoustically.

Dave Flystra, leader of the development project, points out that the "Deaf Telephone" with its cramped keyboard, will be not so easy to use as a normal terminal, but the ability to carry it around in one's pocket should be an enormous advantage.

Two communications modes are available. One is standard 8-bit Ascii at 110 or 300 bits per second, and the other is the 5-bit Baudot code used by the existing "Deaf Teletype Network" in the US.

Four prototype units will be completed in the next few weeks, for use in trials. SRI has no manufacturing facilities itself, but if the project comes to fruition an outside company could be licensed to make the machines in quantity.

Tax gathering in Pakistan

THE KARACHI city authority is considering installing computers to assist in tax gathering and has opened discussions with several manufacturers.

The authority, Karachi Metropolitan Corporation wants to build up records on each taxpayer.

COGARVIEW

Future of still and home movie cameras

IT'S the industry game of the moment, of course, guessing in what new area of consumer technology micros are likely to make their mark. But I want to dwell a little on photography, a subject in which, as friends and close acquaintances will confirm, I have more than a passing interest.

Microelectronics has already done wonders for hand-held television and film cameras, of course, making possible a documentary treatment more naturalistic than Grierson, one of the pioneers of film documentaries, could have dreamed of. Even so, movie cameras remain bulky and unwieldy objects; there must still be room for a lot of improvement.

But I am not primarily interested here in TV and movie cameras; they are already in good hands. Their unit price justifies, and their profit margins fund, a level of R&D spending which can be relied on to exploit any relevant advances in microprocessing.

What I am concerned with is the question whether there is to be a significant micro contribution to the future of still and home-movie cameras. In the short term I am very dubious. Anyone visiting Geneva or Hong Kong or Singapore must stand aghast at the enormous volume of photographic equipment being churned out by firms all over the world; cameras are a staple with the ever-growing discount store phenomenon. I know it's a popular hobby, but can anyone (other than the perennial Polaroid) really be making any money in this market?

The pace may, however, be forced. Kodak's time-honoured, and now court-challenged technique for disposing of rivals is to introduce new developments at such speed that no one can draw breath before there is some new technology to catch up on. It has successfully generated a kind of R&D perpetual motion machine in which past success provides the cash for future developments which start a new bandwagon rolling, providing the cash for yet another development, ad infinitum.

And there is a new threat — the base technology giants. If Texas Instruments and company find it more economic to build calculators and watches than to provide the chips for others, might not the same calculation apply to make them want to "go vertically-integrated" in cameras? The traditional camera market is in just the sort of state of flux now that the watch market was in when electronics came along. The old market leaders are being challenged by the radical new departures of Polaroid and now the promised Nimslo 3-D camera (which has the potential anyway to completely re-shape the market); they are in no position to take on another fight. The Texas Brownie? The Intel Instamatic? Why not?

Well, one possible reason why not is the highly skilled business of lens-grinding, which will eventually become the sole distinction between good and bad cameras. Presumably semiconductor manufacturers would have no wish to get entangled in this particular bed of thorns. They would have to buy in the lenses, and that could make the whole concept look a lot less attractive.

Would an "on-board" micro be a great advantage to camera buffs? Speaking as the owner of a dozen different cameras and an extensively kitted-out darkroom, I would like to say no. For me, the art lies as much in the precision work on the aperture, focus and film speed as in the composition of the shot.

It's quite evident that technology sells cameras; otherwise why would there currently be such controversy raging over automatic focusing? The Japanese, as ever, are out ahead with the Konica C35F, but Polaroid is not far behind with its ultrasonic focusing system, whose advantage over the Konica camera will be that it retains a manual option. And Honeywell (were we just talking about base technology?) is busy touting its optical averaging development and defending it hard against the scorn of Polaroid engineers.

Polaroid says that it will not sell its ultrasonic device separately from the whole camera, ie as an add-on, because it has to be integrated with the rest of the camera's electronics. This sounds like micro-talk to me. I doubt if it will be long before auto-focusing, shutter speed and aperture size control, light metering and very likely film wind-on will be incorporated in a neat little silicon package.

Microprocessing is just one example of what I see as a gradual convergence between photographic technology and computer technology, anyway; and I am not talking about COM. Some interesting developments have lately been revealed in the use of computers to recreate or even create visual images.

The British firm Quantel, for instance, sells a device which digitises a TV video signal, reconstituting it (or any desired part of it) as required. In effect this means that an image can be instantly re-run, with a zoom-in effect on any portion of the original picture, irrespective of its relevance at the time. Though television companies are eating up Quantel's output, one can see an obvious future market in security systems.

More 1984-ish is the work being done by John Whitney Jr at Information International Inc. of Los Angeles. He has developed a technique for creating life-like "photos" of events that never in fact took place, using a 250K Graphica 1 minicomputer made by his own firm (it's roughly equivalent to a Digital DECsystem 10) to simulate the co-ordinates of visual images.

But let's take the thing a bit further. It's quite easy to imagine a new type of camera employing an electronic shutter — a wafer-thin piece of electro-crystal which has variable opacity based on an applied voltage — which allows almost infinitely variable shutter speeds, CCD imaging of, say, 400 x 400 lines, and a tidy cassette storage system. I am sure it need to be no larger than a current fully-equipped 35 mm job.

There wouldn't be much skill involved in operating this camera, but that wouldn't be important. The artist-photographer's job wouldn't really begin until the film got back to the studio where it would be fed into the TV viewer-editor graphics composer.

Images could be merged, perspectives altered to construct a fascinating new world of visual imagery. It sounds way out, I know, but then so did home video tape and video discs a dozen or so years ago. I'll bet someone is working along these lines in the US within three years, and within six I'd be surprised if someone in Japan had not cornered the market.

Harris Series 100 speaks your kind of language

Fortran IV · Cobol 74 · Basic · Harris Macro Assembler · RPG11
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In fact, the Harris Series 100 range of five general-purpose, virtual memory computer systems can handle all these languages simultaneously. That makes them ideally suited for use in commercial, scientific and educational roles.

Each of these modular, complete systems is an expanded and more powerful version of the S110, the basic model in the series which features:

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☐ 10.8M Byte Cartridge Disc and 9 track, 800 BPI, 45 IPS Magnetic Tape Unit, with associated controllers
☐ DMA Communications Multiplexer
☐ Seven language processors, five support libraries — including Total, the renowned Data Base Management System and four RJE and two RBT packages.

A card reader and line printer are standard with all, except the basic system, the S110.

To ensure maximum efficiency in every system, the Harris Virtual Memory Manager (VULCAN) comes as part of the overall package.

VULCAN is a comprehensive demand-paging virtual memory operating system with a simple user-oriented job control language.

With VULCAN each system can operate, concurrently, in interactive time-sharing, multi-level batch processing and real-time processing modes. And with VULCAN, all seven processing languages and support libraries can be used simultaneously.

The System 120, part of the Harris series 100 range.

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TIM PALMER REPORTS FROM HYDERABAD

India pursues a self-sufficiency policy

There are fewer than 20 countries in the world with a locally owned company designing and manufacturing computers — and one of them is India. The company is Electronics Corporation of India, which has mastered 12 and 16-bit minicomputers and is now moving on to 32-bit mainframes.

SINCE Independence, successive Indian governments have pursued a policy of internal self-sufficiency, so that in 1978 there are very few items on sale in India which are not manufactured or assembled within the country. "Be Indian — Buy Indian" is inscribed on the back of millions of brightly painted trucks, and although, as in all countries where imported goods are in short supply, there is great kudos in using imported goods, most of the items manufactured in India are of a high quality.

The Indians, however, have been slow to master mass-production techniques so that even with items like television sets, five companies manufacture a total of only 100,000 sets a year. But versatility and inventiveness are widespread, no more so than in the electronics industry where a single public sector company, Electronics Corp of India, manufactures small quantities of an astonishing range of high technology items.

Founded in 1967, ECIL is *headquartered* in Hyderabad, in the central southern state of Andhra, and is an offshoot of the Department of Atomic Energy.

ECIL's 6,000 employees manufacture television sets, oscilloscopes, electrical and electronic components, instruments for a wide variety of applications including aircraft, X-ray equipment, and microwave and other antennas. Multi-layer printed circuit boards up to six layers thick and up to two feet square are manufactured in-house. ECIL also builds computers.

The first computer was the second-generation TDC-12, a 12-bit mini, unashamedly copied from the Digital Equipment PDP-8. Only 22 of these were built before ECIL moved on to a third generation integrated circuit version, the TDC-312, of which 45 have been built so far. There is also a 16-bit mini similar to the PDP-11/34 in performance, called the TDC-316, and 40 of these have been manufactured.

Not content with the constraints of minicomputer manufacture, ECIL now has its first 32-bit machine under test. Similar in architecture to the Xerox Sigma 7, the TDC-332 comes with 128-Kbyte or 256K-byte core memories, and is claimed to match the performance of an early IBM 370/135. It will support up to four 29 Megabyte disc drives, imported from BASF, and comes with two medium-speed and one low-speed channel. The larger version has a floating point processor, decimal arithmetic facilities and a separate input-output processor.

ECIL plans to switch from core memory to 16K-bit semiconductor memory chips from Mostek.

The TDC-316 mini comes with a standard 32K-words, with a 128K-word maximum, and is priced at a formidable £160,000 for a basic system. It has two buses, one for peripherals which provides direct access to 4K of the memory, and the other for the rest of the memory. Several special systems have been put together by ECIL for specific customers, while a message-switching system based on two TDC-316s for the army has just completed tests.

At the bottom of the scale, ECIL is just beginning to get a micro business system into the market. Called the Micro-78 and built around the Intel 8080A, the machine has an import content of only 15 to 18 per cent. It supports up to four floppy disc drives, again from BASF, and a minimum configuration with 8K-bytes of memory and an imported Teletype costs £5,330. Bigger systems can cost as much as £30,000, and ECIL has built five so far and plans 35 for the current year.

Peripherals manufactured include teletype-compatible and RS232 interface display terminals, of which about 20 have been made, a card reader, and a tape drive which has an imported servo motor, but is otherwise entirely indigenous.

ECIL also makes core memory, and is currently working on a $4 million contract from the Soviet Union for core memory stacks. The 18 mil cores are imported and ECIL does the stringing.

On the software front, ECIL employs 150 people, 50 doing system software and the remainder working on applications. Software developed includes a cross-assembler for the TDC-316 which runs on ECIL's CII Iris 55 mainframe; a 1401 cross-assembler and emulator to run on the 316, and Cobol 68 and E-Cobol compilers for the 316. E-Cobol is a Cobol-like assembly language. A database management system for the mini is under development, a real-time operating system is planned, and software to enable the Micro-78 to be used as a four-station data entry system is on the way.

A major effort is going into software for the TDC-332 mainframe. A model simulation language has been developed. Fortran, Basic and Cobol compilers are under way, and a multi-programming operating system should be ready within the next year or so; followed, two years later, by a time sharing operating system.

Applications include support for a police fingerprint processing system on the TDC-312 which is in use in Delhi and Bombay and wanted by other police forces. The batch system gives a four-hour turn-round on inquiries.

Compeda's high technology software for Italy

ITALY is the latest market to be addressed by the NRDC's Compeda subsidiary (CW, February 3, 1977). The company is to exhibit its high-technology software at the international conference on interactive techniques in computer aided design at Bologna, Italy, between September 21 and 23.

Products featured will include the Plant Design Management System (PDMS); the Gaelic system for integrated circuit design; and packages for production engineering.

Also on show will be Splica, a computer program that synthesises spline curves passing through a set of data points.

Splice generates pieces of a family of Cornu spirals — like the draughtsman's French curves or flexible curves. This approach allows very compact curve descriptions.

Belgians badly informed about DP costs—report

DATA processing in Belgium is the subject of a new report* by the Brussels-based Sobemap company, part of the Metra group. The results are based on a survey conducted in 1977, to which 91 organisations responded, and follow a similar study conducted in 1972.

The report is divided into three main sections: cost, applications and operating procedures, and the management of computing facilities. In each area, findings are separated according to installation size, and trends since the earlier report are highlighted.

The report notes that many organisations remain badly informed about the capabilities and costs of their computing facilities.

Software costs in particular are very poorly understood, despite the fact that software expenditure is doubling every three years, as opposed to a four-and-a-half year cycle for hardware, says the report.

Among significant changes since 1972, the report notes dramatic increases in multi-programming and distributed processing, particularly for data capture in large concerns.

*L'Ordinateur dans les Entreprises Belges. Available from Sobemap, Place du Champ de Mars 5, Boite 40, 1050 Bruxelles. 1,500 Belgian Francs.

Dual Criterion for Sydney

A DUAL NCR Criterion computer system has been installed by the Legal and General Assurance Society at its central office in Sydney, Australia.

The deal is worth $A[illegible] million and consists of two processors, a 512K Criterion 8570 and a 384K 8550. Peripherals include six 200 Mbyte disc drives, six tape drives two line printers, and five VDUs.

Most companies buying computers don't know what they are doing

Recent surveys show that more than half of the companies buying computers have contacted only one manufacturer. This is strange, taking into account how large their investment is. Because we do not believe that anyone can be sure of the right choice without knowing what other firms can offer.

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Norsk Data A.S develops, produces and markets NORD Computer Systems. The NORD systems have found extensive use in research and education, process control, data processing and networks: the application areas are continuously increasing.

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Classic success rules out GEC link

THE success of Modcomp's new Classic 7860 system has ruled out any possibility of major collaboration with GEC, according to Ken Harple, founder and chairman of the Florida-based minimaker.

Modcomp had detailed discussions with GEC late last year which centred on the UK company taking a stake of about one quarter of the shares in Modcomp and, even after the talks were broken off, some kind of collaboration in Europe was envisaged (CW, February 9).

"GEC is now out of the picture altogether," Harple told Computer Weekly in an exclusive interview at the company's Fort Lauderdale headquarters.

"Late last year our stock price was very low, and we were looking for some kind of insurance in case our figures did not turn round. But our performance since then has been so good that we no longer need any support.

"We anyway discovered a basic cultural problem with GEC."

Harple declined to elaborate on the "cultural" differences, but they may have something to do with GEC managing director Sir Arnold Weinstock's lukewarm feelings towards the computer industry.

New models are coming shortly in the Classic line, which will ultimately consist of three basic processors. There will be a new powerful processor above the one used in the Classic 7860, and micro-Classic at the bottom of the line. All are 16-bit machines.

"We will begin software development in the UK in the fourth quarter of this year and are also doing final assembly and test of systems there. We plan to begin volume production in the UK in two years' time."

There is a stronger emphasis on software at Modcomp than at most manufacturers, and the company already has 75 to 80 software development engineers as against 70 on hardware.

"We chose to site some of the software development in the UK because of the shortage of technical personnel here in the US. We also find that people are much less willing to move around the country than they used to be. The software people we have hired in the UK are very good indeed: they tend to be more disciplined and better than their US counterparts."

Harple . . . "our performance has been so good that we no longer need any support."

'Double your memory'

THE facility from Telefile which enables users of the veteran Univac 1108 to double memory capacity to 512K words, has now been formally announced by the company. First revealed in Computer Weekly (March 20), the package, called Telefile 1108 X-10, adds four additional memory access channels and uses Telefile's T-7005 128K word memory modules.

An unused bit in the Univac memory address is brought into service to provide direct addressing of all 512K words without memory mapping.

The hardware is transparent to the OS 1100 operating system, and the Telefile memory, which can be combined with the original Univac memory up to 256K words, takes up one third the floor space and 70% less power, according to the company.

The 1108 X-10 package costs $440,000 with 256K words of memory, including modifications and installation.

UK, French talks on competing with US

PERIPHERAL and terminal manufacturers in the UK and France are getting together to discuss ways in which they can more effectively compete against the big US and Japanese manufacturers that enjoy far greater economies of scale in their production.

Robin Lingard, head of computer industry policy at the Department of Trade, told Computer Weekly that he is arranging a meeting in Paris in September, some time during the Sicob exhibition, between a group of UK peripheral manufacturers and members of the Club de la Péri-Informatique, the French peripheral builders' association.

The meeting is being arranged by Lingard in co-operation with Dieli, the French government body which oversees the computer and electronics industries and, according to Lingard, the intention is to discuss areas in which UK and French peripheral builders can "sensibly co-operate."

Lingard pointed out that the Prime Minister and President Giscard decided that computer peripherals should be an area of co-operation between the UK and France when they discussed economic co-operation earlier this year.

Lingard said that a group of UK peripheral manufacturers, including Data Recording Instruments and Data Dynamics, had met at the Department of Trade several times over the last nine months, although no decisions had been made yet about co-operation.

One existing example of Anglo-French co-operation in the peripheral area is that between Data Dynamics and Périfèrie, which is its French subsidiary, but which enjoys a high level of autonomy.

Development and production of terminals is divided between the French and UK organisations.

- The effectiveness of French government intervention in the national computer industry is underlined by figures just published in France by Dieli and by the Club de la Péri-Informatique.

For the first time since 1970, the French hardware industry had a balance of trade surplus last year, with hardware and services exports standing at 4,823 million French francs, £550 million, and imports 0.4% less at 4,596 million francs/ £545 million.

This performance is considerably better than that of the UK, which last year exported about £350 million of hardware but imported almost £700 million.

The Club de la Péri-Informatique did particularly well, with combined turnover of its members up 28% at 1,600 million francs (£190 million

Univac the star at Sperry Rand

AT a time when all the leading US computer manufacturers except IBM are reporting major profit surges, several US analysts have singled out Univac for particular attention.

In Sperry Rand's first quarter (April to June), profit rose over 20% to $45.2 million on turnover, up 17% at $972.5 million. Chairman and chief executive Paul Lyet identified Univac as the star performer with new orders up nearly 25%.

The backlog for the 1100/80, largest machine ever introduced by the company, has tripled over the past year, and according to Lyet, Sperry will be investing a "disproportionate amount" of its research and development budget in the Univac division.

"The computers we are working on for the future will offer as much price-performance improvement over existing computers as today's computers offered over their predecessors," Lyet told the Wall Street Journal.

ROUNDUP

A summary of main news items which have appeared since the last issue of Computer Weekly International.

NEB transatlantic micro venture

KEY features of the plans announced for Inmos, the UK National Enterprise Board's venture into the memory and microcomputer market, are an American managing director, semiconductor pioneer Dr Richard Petritz, and production facilities in the US and possibly the Far East. The corporate HQ will be in the UK. The company will aim directly at the volume world markets that are developing for VLSI microcomputers and storage devices manufactured using N-channel MOS process technology.

PRESIDENT Carter has made it clear that the ban on the export of a Univac 1100 mainframe for the Soviet News Agency, Tass, was an isolated response to the sentences passed on the Soviet dissidents. Tass wants the machine in part to provide message services for journalists during the Moscow Olympics (CW, July 27).

IBM'S share of America's worldwide computer base is on the increase, according to an analysis by Advanced Computer Techniques of figures from International Data Corp. IBM's share in 1977 was 71.1%, in 1976, 68% (CW, July 27).

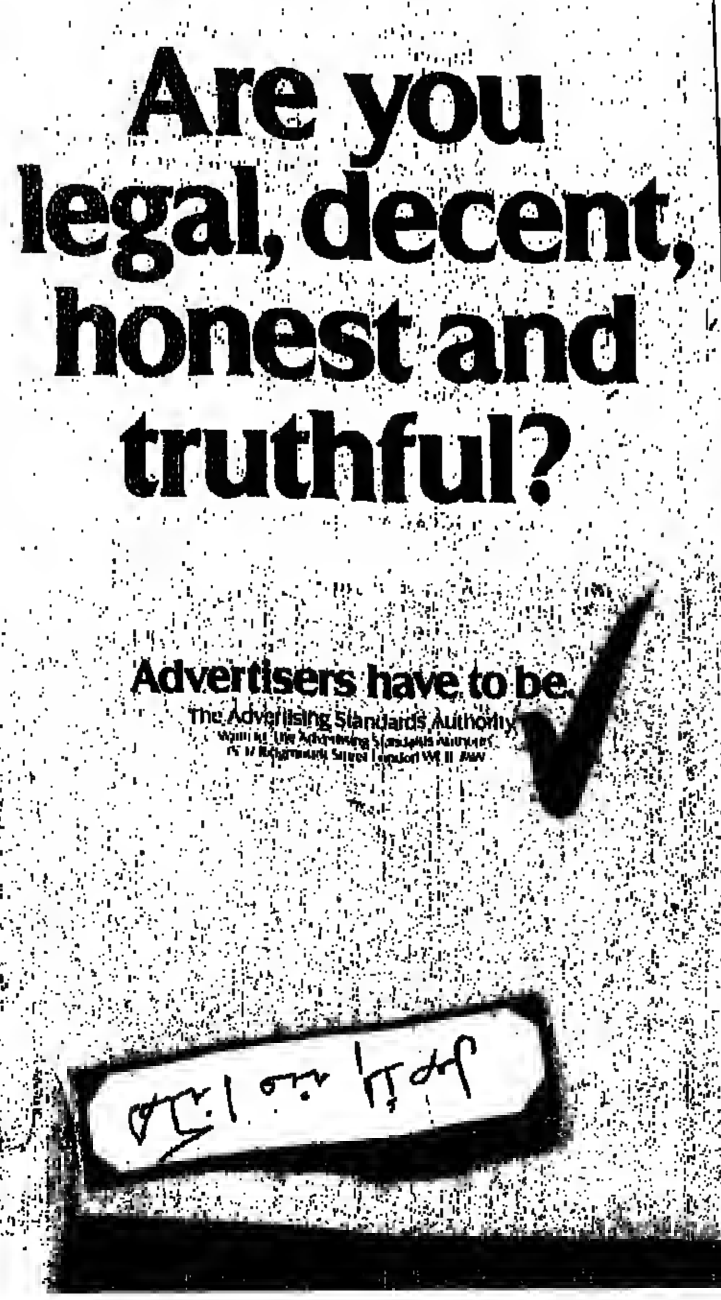
OPEN competition in the provision of all communications services and the ability for common carriers to provide non-telecoms services were among the sweeping changes in a legislative proposal on the communications industry introduced into the US House of Representatives in June (CW, July 20).

THE proposed implementation of X25 as the protocol for the data network service from AT&T, and a push by the US National Bureau of Standards to enforce a much-criticised I/O standard as the first mandatory US government Federal Information Processing standard, have given further impetus to growing efforts to improve standardisation (CW, July 27).

SOME two dozen US companies, including Time Inc, Xerox Publishing, GE and Western Union, are subscribing to a multi-client study into viewdata which is being undertaken by UK consultancy Butler Cox, entitled Viewdata and its Potential Impact in the USA (CW, July 20).

PARTS of IBM's VM/370 operating system have been recoded by Amdahl Corp in order to reduce the overhead imposed by running the large-scale MVS operating system under VM (CW, July 20).

AN average of one school year's gain in reading level was made by several hundred "functionally illiterate" people in the US after only 12 hours' reading training on a Control Data Plato system using the Basic Skills Learning System. Similar success was also shown in maths teaching (CW, July 20).



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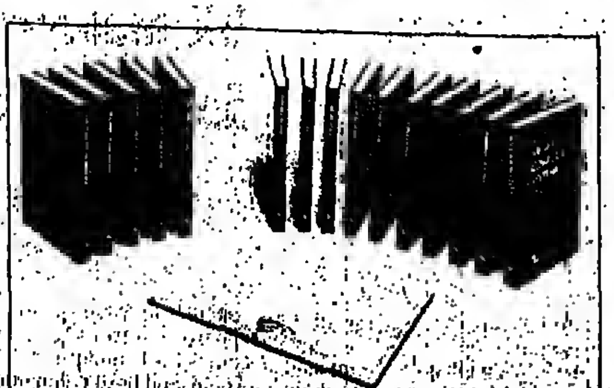

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Fujitsu announces a new range of minis

MANUFACTURING of Fujitsu VO-3 office computers in Spain is now under way and the plant, at Malaga, currently has assemblies for 26 VO-3s, called Series 30 in Spain. Once its permanent plant is finished, before the end of the year, manufacture will be set at 100 units a year. The company building the Series 30, Secoinsa, is 29% owned by Fujitsu.

Meanwhile in Japan Fujitsu has announced a new range of minicomputers, the Panafacom U-1000 series, which replaces the ageing U-100 line. Models announced are the PFU-1500, with up to one Megaword of main memory, the PFU-1300 and the PFU-1100. The 1100 comes with 16 or 32K-words. The general purpose minicomputers are expected to be widely used as concentrators in Fujitsu Network Architecture systems, and as announced are much more flexible than IBM's 3790, which performs a similar role in SNA, and much richer in software than IBM's Series 1, which is now being used in some SNA networks.

Languages available on the U-1000 line include Cobol, Fortran, Basic, a Macro-assembler and Mumps, the interactive data management language.

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INTERNATIONAL NEWS IN BRIEF

£5.5m order for Sweda

A CONTRACT for point-of-sale equipment, signed in the US by the Handy Dan Home Improvement Centres division of Dayline, for Sweda 800/80 Home Centre Systems could be worth £5.5 million over five years.

This figure is based on the planned increase in the number of stores in the chain. The equipment comprises six to 12 Sweda 800 PoS terminals and one System 80 processor per store.

470V/7 for AT&T

FURTHER underlining AT&T's status as a prime Amdahl customer, the Western Electric subsidiary at its Warrenville, Illinois, plant is to get the first Amdahl 470V/7 mainframe later this month. This is claimed to be "considerably more powerful" than IBM's 3033. Also in line for a 470V/7 is American Airlines in Tulsa, Oklahoma, which already has a 470V/6 (CW, January 12).

Japanese cuts

FURTHER Japanese tariff cuts on imported computers are in the wind, following heavy US and European pressure on the Japanese government to reduce its enormous balance of trade surplus. At last week's Bonn summit, the Japanese proposed reductions of 7% on CPUs and 10.5% on peripherals. In negotiations, they appear to have offered 4.9% and 6% respectively.

Space debut

PROBABLY the first batch of semiconductor material ever to be man-made in space has been produced by Vladimir Kovalyonok and Alexandar Ivanchenkov, cosmonauts in the Russian Salyut 6 space laboratory. Such manufacture in space is of considerable long-term importance, for zero gravity produces much better crystal orientation in silicon, leading to potentially higher production yields and performance of devices.

£500,000 order

A £500,000 order for the Plessey 4660 telex and low-speed data system has been awarded to Plessey Controls of Poole by the Government of Brunei.

Australian company wins more contracts from IBM users

THE Australian firm that hit the headlines early in 1976 when it took over the maintenance of all British Airways' IBM systems, Data Processing Customer Engineering, is now starting to pick up maintenance contracts from other IBM users in the UK and is looking seriously at Italy and Ireland as the next two European countries in which to set up business.

Apart from British Airways, DPCE now has six other clients, all within easy distance of Heathrow where the main BA computer installation and the majority of DPCE's staff are located, but DPCE's general manager, Max Eastwell, told Computer Weekly that he was interested in picking up contracts in the Midlands and North of England, even if they were small installations, provided they had what he called "growth prospects."

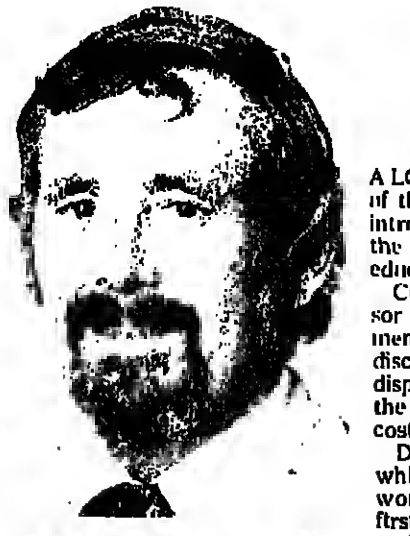
Eastwell said that DPCE would probably open an office in Italy within the next 12 months, with Milan as the most likely location, adding that Italy was the most promising of all the other major European countries for DPCE because of the level of dissatisfaction there with maintenance provided by systems suppliers.

Eastwell pointed out that Singapore and Hong Kong were two locations where DPCE was definitely setting up shop this year and that DPCE already had confirmed big customers in both places in the same way that it secured the BA contract before moving into the UK.

Now that DPCE is firmly established at BA, its contract with the airline has been extended for another five years from September at a value of about £4 million at current charges.

The six other customers now serviced in the UK by DPCE include Jaserve, a bureau based at Frimley Green, Surrey, the London-based Tempo Computer Services which provides service to the advertising industry and the Meteorological Office at Bracknell, Berks, where DPCE maintains the add-on memory on the 370/195 installed there.

DPCE employs 43 people at the moment in the UK including 27 customer engineers, and about 100 worldwide, most of the others being in Australia where DPCE's customer line-up includes Qantas.



DPCE general manager Max Eastwell . . . "office in Italy within the next 12 months."

Germans introduce a low-cost version of the Dietz mini

A LOW-COST packaged version of the Dietz 621 mini has been introduced in Germany aimed at the scientific, engineering and educational markets.

Consisting of a 621 XI processor with 16K or 24K words of memory, two 256K byte floppy disc drives, a 1,920 character display and a 200 cps printer, the system, designated 621 CXT, costs Dm 67,500.

Dietz says that the system, which is built into a large work-bench, is suitable for first-time users and can be built up into a much larger system.

The operating system used is the Dietz XOS, and compilers offered include Fortran IV, Basic, and C-Basic, together with an editor and other utilities.

Direct input for Dutch newsagents

THE UK built system that enables data to be input directly as it is written, the Quest Datapad, has been installed by Publico NV, one of the biggest newspaper distributors in the Netherlands. It will be used for data entry jobs where the more traditional keyboard/VDU set up is awkward and where recording information on a piece of paper and then keying it is an unnecessary waste of time.

The Datapad system installed by Publico at its Tilburg computer centre has 16 keystations and has taken some of the workload off an existing key-to-disc system.

The Datapad keystations are used for recording orders and order changes telephoned in to the Tilburg centre.

As with a conventional key-to-disc system, the Datapad data entry stations are linked to a minicomputer controller. At Publico the Datapad system collects data for processing on Publico's Honeywell mainframes and Quest points out that the Datapad system has also offloaded editing tasks from the Honeywell system.

Boycott by 500 scientists

A GROUP of 500 US scientists have agreed to stop all personal co-operation with the Soviet Union in protest against the imprisonment of the dissidents Scharansky and Orlov.

Malcolm Derrick, physicist at Argonne National Laboratories, announced this when greeting Scharansky's wife Avital when she arrived at Chicago Airport.

CII-HB in Indian link-up

FRANCO-AMERICAN mainframe manufacturer CII-Honeywell Bull is planning a collaborative computer marketing venture in India following the finding of a suitable partner. The plan, which is being fostered by the French government, is likely to involve manufacturing there.

CII-Honeywell Bull was originally involved in the Indo-EEC initiative on joint computer projects, but later withdrew to pursue an independent approach (CW, January 12).

£5m terminals

THE Swiss PTT has ordered terminal systems worth £5.25 million from Thomson CSF of France for use in its TERCO computerised telephone information system based at Lucerne.

EEC non-committal on jobs

AN Irish member of the European Parliament, Patrick Power (Fianna Fail), worried about the effects of new technology on employment, has asked the European Commission for its views — and has received a non-committal answer.

The Commission pointed out that new technology creates new jobs as well as destroying old ones, but it does require a more mobile and adaptable workforce.

The Community provides aid for retraining from the European Social Fund.

Many studies have been undertaken by the Commission, it said, on future employment, and the forecasts indicate that the slowdown in growth of the population in 1985 to 1990 should help to relieve the pressure on employment.

Honeywell retaliates

ADVERTISING worth $400,000 scheduled to be run in the US magazine Business Week has been cancelled by Honeywell, following an article that the company felt was "hostile." The article expressed scepticism about Honeywell's business prospects.

A Honeywell spokesman said: "An advertiser runs his advertising in a supportive atmosphere or, at the very least, a neutral atmosphere, not a hostile one."

UK manufacture of Apple II personal computers

MANUFACTURE of Apple II personal computers for the European market will take place in the UK under an agreement between ITT and Apple Computer.

The licensing agreement specifies purchase of subsystems and peripherals from Apple, and both companies have agreed to a free exchange of software.

ITT intends to concentrate on small business applications in the future.

ITT already sells complete systems from Apple, and the manufacturing licence has been under negotiation for several months (CW, May 18).

German defence university installs Univac 1100/21

A NEW German university run by the defence forces has installed a 1100/21 mainframe computer from Univac. The machine, serving 45 Uniscope 100 display terminals, 17 matrix printers and five graphics terminals, will support studies in mechanical engineering, electronics, teaching, management and general administration.

The university, in Hamburg, resulted from a proposal by Helmut Schmidt, the West German Chancellor, to improve the development and culture of the defence forces. The first buildings were ready in 1975.

Plessey for French chain

FRENCH supermarket chain Minifix SA and its purchasing organisation Socem, at Landrecies, Northern France, have installed a Plessey 1450 portable data capture system for stock control.

A total of 17 supermarkets and hypermarkets will be equipped with the system, which features a light pen and cassette recorder.

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Significant material is discarded

LETTERS

I AM writing in reply to Mr Simpson, Mr Andrew and Ms Raimes (Letters, July 20). Naturally they defend the contributions of the Science Museum, Edinburgh and Birmingham museums. I had not intended to give the impression that the Science Museum was the sole centre of historical work in computing. This was an unfortunate and accidental ellipsis for which I apologise. My criticism was not meant to refer to the historical collections but the amount of space available for showing these to the public.

Two reasons were given for the fact that industry often discards significant material. Firstly, that such material was already in collections and not wanted; secondly, that industry did not think to offer hardware to museums. My strong impression is that the latter is often the case. Perhaps a more public and positive approach by the museums to the industry as a whole may get a better response.

The letter in reply to my original provides excellent indirect support for the idea of a national computing museum. The authors write, "Between us we preserve a very wide range of machines." This suggests that individually in some areas they are deficient as I originally suggested.

When I take my pupils to one of these institutions it is of little use educationally for me to tell them that a particular significant piece of hardware is several hundred miles away, or in the store of the museum I am using. If the function of museums is seen primarily or exclusively as providing simply facilities for "historians and scholars" then this geographical separation may be acceptable as may limited public viewing facilities. It is worse than useless for educational purposes.

Society is going through a revolution as far-reaching as the industrial Revolution. The computer is as important for this as was the steam engine in the earlier era. If people are to understand the new society, a major educational task lies ahead. For this the work of the museums is vital.

The historical and educational task can, I believe, only be supported by a large-scale national centre for the history of computing and information technology at which visitors, the general public, schoolchildren and students could gain a comprehensive overview of the technology which is revolutionising their lives.

JOHN COOKSON
Harpenden
Herts.

No suitable premises

I WAS surprised to see it reported that the manufacturing director of Data Recording Equipment said that "In Crewe the problem was a shortage of modern property" for the expansion which his company wishes to undertake (CW, July 13).

As a borough councillor I cannot let that go unchallenged. He must know that there is a very significant development at Crewe Gates Farm which includes units ranging from 2,000 to 40,000 sq ft all becoming available over the next few months, and if he does not know that the rentals and leasing arrangements which the council provides are as competitive as any in the country then he has chosen to ignore the information he must have been given.

It is no more than two years since I met many of the DRI management who expressed great confidence in Crewe and satisfaction that the council's plans were most suitable for them. It is a pity that your article creates such a false impression.

P.A. KENT
Borough of Crewe
and Nantwich

The article by no means created a false impression and David Dean was correctly quoted. No premises at present available or planned are suitable for DRE's purpose. However, the company confirms that it is still eager to find a suitable site in the Crewe area where it can develop an integrated manufacturing plant to house its overall operations. — EDITOR.

CHESSLAB

By Donald Michie

Tension in the computer chess community is rising as the August 31 deadline draws nearer in the £1,250 wager between David Levy and four computer scientists. The bet struck in August 1968, was that Levy would not lose a match to a computer chess program within ten years.

At the end of last month, a match was cancelled at the last minute between Levy in London and Chess 4.7, an upgraded version of the world computer chess champion Chess 4.8, on a CDC Cyber 176 in Minneapolis.

Levy will now play Chess 4.7 in Phoenix Arizona, later this month and, if he still survives unbeaten, against a further enhanced version of the Northwestern University, Chicago world champion program developed by Larry Atkins and David Slate.

The four people who stand to lose £1,250 if Levy wins are regular Chesslab editor Professor Donald Michie, of Edinburgh University, Professors Seymour Papert of the Massachusetts Institute of Technology and John McCarthy of Stanford University, and Dr Ed Kozdrowicki, co-author of Coko, one of the pioneer computer chess programs.

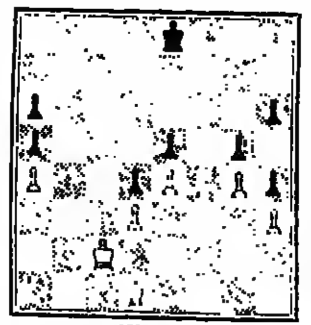
# Win or lose—much interesting work

TO convert Chess 4.6 into Chess 4.7, a "transposition table" has been added whereby the program spares itself duplication of effort when growing its look-ahead tree. In chess, variations of possible lines of play not only branch out from each position: they can also converge in again arriving at the same position *via* numerous different move sequences. An automatic memory for previous occurrences of the same position saves the program from re-sprouting replicas of the same sub-trees over and over again in different parts of the same search. The transposition table, implemented by efficient use of hash-coding techniques, provides the needed rote-memory.

In the opening and middle game the table is handy, but not of large effect. This is because the branching-out of lines greatly preponderates over reconvergence. Consequently only small improvements of search effectiveness are gained. With end-game situations the story is different. Here the size of the space to be searched may become so cramped that reconvergence begins to dominate.

In the position shown, White must choose a move. Forward analysis will in this case contain mainly King moves, so that an estimated branching ratio of about ten alternatives per move for each side seems fair. Moreover each King has only about 20 attainable squares he can legally stand on, and White's Bishop has less than 30 potential stations in all. Pawn captures, insofar as they can be engineered at all, belong to the more remote future.

During the considerable look-ahead span over which the interlocked pawns can be relied on to remain fixed, the possible King-King-Bishop configurations accordingly number less than 20 x 20 x 30, or 10,000 in round figures. This is a small number relative to the search capacity of the program, so reconvergence of lines will plainly be the dominant feature of the look-ahead search. The benefit derivable from the transposition table is correspondingly large. When the search has saturated possible configurations within this limited horizon, time and resources remain for pushing a few exploratory lines really deeply (in the example shown, the line concerned with forcing the White King through the pawn gap is the obvious candidate).



WHITE

WHITE TO MOVE. Because of the blocked pawn formations and few pieces, use of a "transposition table" to prevent redundant calculations greatly extends the depth of forward search.

Chess 4.7 recently defeated Grandmaster Browne in a simultaneous exhibition (CW, June 22). The game lasted into the late end-game, where program performance was materially aided by use of the transposition table.

It is not fitting for me, as an interested party, to predict how Levy will fare in the flurry of matches in Phoenix, Arizona, and Toronto, which will take place shortly. The deadline for his wager made in August 1968, that he would be unbeaten by computer for 10 years, expires on August 31 (or if a challenge match happens to be in progress on that date, then at the close of the said match). By then either he will have collected £1,250, or I and my wager colleagues will have relieved him of a like sum. Win or lose, much interesting work, and some exciting moments, will have been generated. So even an adverse outcome would not leave me disconsolate.

A side-bet, however, does give me pain. I wagered an additional £500 that, if Levy loses, it will be to a program developed under my direction. Alas, that was in the days when I could still freshly remember having a laboratory staffed and funded on a reasonable scale.

These things did not return. It would be nice to think that lack of laboratory resources is a blessing in disguise. To my eyes the disguise remains impenetrable. I avert them towards the interesting contests of this month.

In the first of these, at Phoenix, Arizona, Levy will again play Chess 4.7. There will be a $5,000 prize for the winner and a $1,000 consolation for the loser. Presumably a drawn match will give them $3,000 each.

The second match (assuming Levy survives the first) will be in Toronto in association with the Canadian national exhibition. Levy's opponent will be Chess 5.0, which David Slate is racing to complete at this moment. By that time I should imagine that Levy will scarcely care whether he wins or loses as he has negotiated a "performing fee" of $10,000, irrespective of outcome.

New electronic games

THE manufacture of the Chess Challenger machine reviewed earlier (CW, December 8, 1977) has produced two new electronic games.

One, called Checker Challenger, can be set to four alternative levels of play. If he knows how, the user can also invoke a fifth level, harder than the others. Presumably it was at this level that it qualified, as the makers tell us, for membership of the American Checkers Federation. It is available from the large stores at £99.95.

The other new device, the Electronic Chessboard Tutor, costs £45. It does not play chess, but allows the user to take himself through a course of programmed instruction, in which the tedium is lightened by making his trial moves on an actual chess-board, which magnetically senses the pieces placed upon it.

For a given lesson, the appropriately punched instruction card is slotted into the device, so as to lie between the surface of the board and the sensing elements and micro-circuitry of the interior. If one of the holes in the card lies somewhere under a square, then a piece placed on that square is sensed. By ingenuity in placing the holes it is possible to step through a series of chess positions, each time cranking the card onwards a stage by winding a toothed wheel. The device "knows" at each stage whether the pupil's trial move corresponds to that recorded as correct in the current frame of the sequence. If it does, then a yellow light shows. If not, he can try again, or take a "hint." The latter consists in merely lifting the chosen piece with a certain key depressed, and getting either a red (wrong) or green (right) signal. The user can thus gain partial information, eg that that piece must be moved *somewhere*, without being told where.

This is probably the most useful feature, together with an "asterisk" signal which gives a hint of a different kind — namely that the move in question is important.

At any stage, the user can crib the answer by pressing another button. A mini-textbook accompanies the set and helps steer the pupil through the lessons.

Even in its present form, the Electronic Chessboard Tutor is expected to sell. But the tutorial material is sketchy and the device itself has a number of drawbacks. Most people would prefer real pieces to counters painted with symbols. The text on the program cards has a quaint flavour, suggesting translation from French—borne out by the labelling of file "e" in the diagrams with the symbol "é." The instructions for slotting the program into the machine do not correspond for lessons 1 and 2 with what you have to do, and in my hands the tooth wheel for stepping the card on a stage had a nasty habit of slipping. Also, the green light showed on some occasions when it should have been red.

On the other hand, viewed as a portent of things to come, the kit is interesting. I await Mark 2 and its successors. Perhaps in 2001 AD those parts of the day and week not occupied with the latest game-playing and instructional device will see us feverishly engaged in the design and development of new electronic amusements! I can imagine worse fates — and also better ones.

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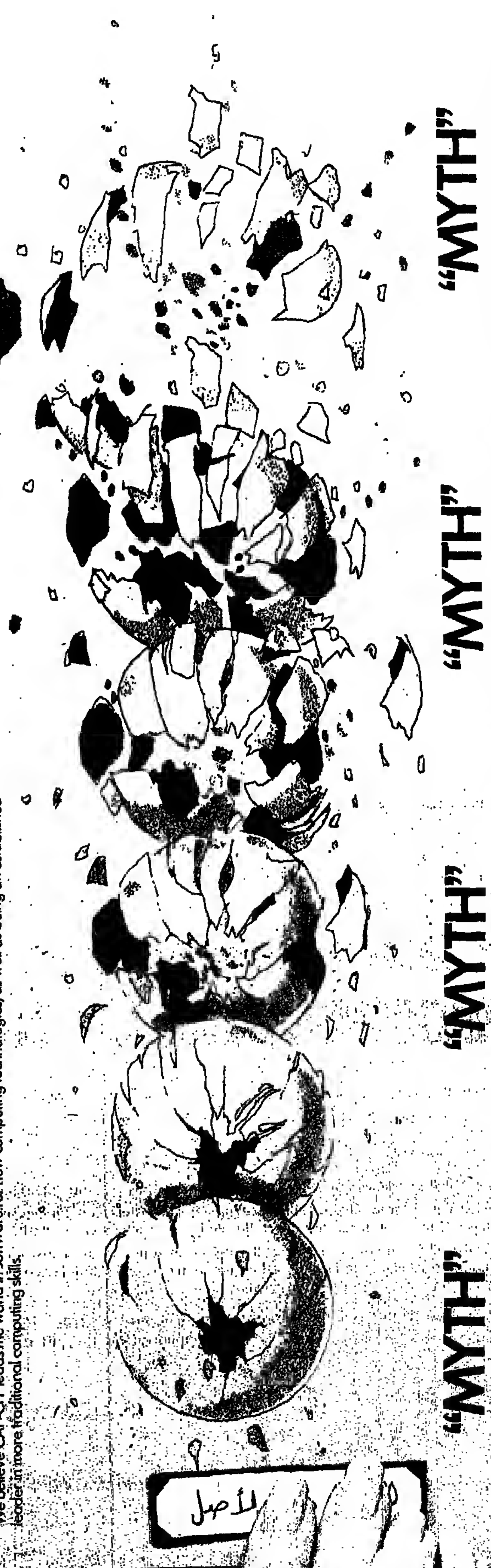

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Applications vary from management information packages to financial and technical modelling on the one hand, and from engineering consultancy to bureau services on the other.

A minimum of 12 months' experience is desirable and, due to the diverse nature of their applications, a background on any mainframe or mini machine will be acceptable.

Opportunities to progress into Systems Analysis or new technical areas are available, and there is the added bonus of occasional overseas travel as well.

Reference PG31/4

[illegible] Recruitment Ltd
[illegible]
[illegible]
London W1R [illegible]

01-439 7871
24 hour answer phone

FREELANCERS

We are a growing consultancy with an immediate requirement for freelance programmers with knowledge of the following.

COBOL, Assembler, DOS/VS, CICS/VS — Knowledge of Securities an advantage, also knowledge of German helpful but not essential. We have an on-going requirement for

ON-LINE Programmers with knowledge of Taskmaster, IMS, TCAM. ADABAS, TOTAL.

Contracts of varying lengths — minimum 3 months — in Switzerland or Germany. Excellent salary offered to the right people.

Interested? Good Enough? Send your Curriculum Vitae to BALAGLOW LTD., Box No. 1972, Computer Weekly, Dorset House, Stamford St., London, SE1 9LU, as soon as possible, including availability for commencement of contract.

RPG II Programmer c.£5,500 p.a. gross

Borax Holdings Limited, a member of the RTZ Group, is replacing its existing 360/20 with an IBM System 34 using on-line data entry facilities.

We wish to recruit a programmer to assist the Data Processing Manager in the conversion and development of new systems.

The successful candidate will probably have 18 months-2 years' experience in RPG II on System 32 or System 3 and will be capable of deputising for the Operations Manager or the Data Processing Manager.

Good working conditions, contributory pension scheme and free lunches in staff restaurant.

BORAX a member of the RTZ Group

Please apply for application form to Miss E. J. Love, Personnel Officer, Borax Holdings Limited, Cox Lane, Chessington, Surrey KT9 1SJ. Tel. 01-397 5141.

CHARING CROSS HOSPITAL

Applications are invited for the post of

COMPUTER OPERATOR

In the Department of Medical Computing Science.

Salary £3848-£4188 or £4186-£5282 according to experience (including shift allowance)

The Department currently provides an on-line computer service for laboratory and patients' administration applications within the hospital. Plans are currently underway to provide similar facilities in three other hospitals, via communication lines and remote terminals. The system is based on a powerful Sigma 6 configuration with a wide range of terminals.

The successful applicant will join a small operations team and work a two-shift system (no nights), with some weekend overtime. Previous experience of Sigma hardware is not essential, but one or two years' experience of timesharing systems would be an advantage.

Staff facilities are excellent and include a subsidised restaurant and social club which provides squash courts and a swimming pool.

For further details and an application form contact District Personnel Department, Charing Cross Hospital, Fulham Palace Road, London W6 8HH.

Tel. 01-748 2040 Ext. 2897

Closing date for receipt of applications 18th August 1978.

MICROSTAR ★★★★★★★★★★★★★

Cobol Programmers

£6,000 negotiable — Guildford

Our client is RIAB Data Limited, the U.K. associate of a leading Swedish data processing consultancy.

As part of its U.K. expansion programme, RIAB is offering key early positions to a number of above average programmers both in COBOL and FORTRAN.

The role of a consultant programmer is both demanding and rewarding. It calls for superior technical competence allied to an energetic and confident personality. The rewards offered by RIAB both intangible and tangible are correspondingly high.

The advertised positions will be Guildford based and will initially require reasonable mobility. Sex of course is immaterial, but candidates with fewer than three years' experience would be unlikely to qualify. Preferred age range is 25-35.

Write initially with brief career details to:
The Managing Director
Microstar Limited
Hitherbury House
97 Portsmouth Road, Guildford, Surrey, GU2 5DL
Telephone Guildford (0483) 33031

★★★★★★★★★★★★★★★★★ **MICROSTAR**

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

PROGRAMMER

S.E. LONDON **£5500 neg.**

We are seeking an RPG II programmer with between eighteen months and two years' experience to join the expanding computer division of a company in South East London.

The successful candidate will be engaged on the development of commercial applications and will have the opportunity to gain analysis involvement progressing eventually to a more senior analysis and management position.

The company are committed to more advanced hardware which will be installed in the early part of next year. They are prepared to offer a competitive salary, negotiable depending on the level of experience but likely to be in the region of the figure quoted above.

Ref. EI 0308

SENIOR PROGRAMMER

MIDDLESEX Any Machine Background To £6500

A major commercial organisation, with diverse interests world-wide, is currently commencing a number of substantial development projects. Senior programming staff are therefore required, who will take Design and Development responsibilities working in a project team environment using COBOL.

A high degree of technical merit is required coupled with the ability to direct the endeavours of junior staff.

Currently, major efforts are being directed at inventory control and financial applications areas using on-line techniques.

In addition to an attractive basic salary and the fringe benefits expected of a large company, the candidates appointed can look forward to excellent career development paths and the challenge of making full use of their background and ability within a sophisticated environment.

Ref. N2 0308

2 YEARS' ANY COBOL

SURREY PROGRAMMERS TOTAL TO £6500

Our client is eager to recruit additional Programmers in order to release several projects awaiting development. Centred on large IBM mainframes operating under OS, the D.P. department is ready to expand its database systems to encompass the new applications

Programmers will undergo an extensive training scheme encompassing languages, database techniques and teleprocessing.

Applicants should offer at least 2 years' experience (18 months with relevant degree) in COBOL on ANY MACHINE, or IBM ASSEMBLER.

The Company's modern, air conditioned data centre is set in the attractive countryside of Surrey and offers successful candidates an excellent opportunity to advance their careers within a progressive environment. Generous relocation expenses are available and the total benefits package is financially very rewarding.

Ref. S2 0308

YOUNG ANALYST/PROGRAMMERS

Near CROYDON £4500 to £6000

Excellent opportunities exist within a major computer services company for three additional programmers keen to progress their careers within an active development environment.

These positions offer

- ★ New development projects
- ★ Analysis involvement
- ★ Pre- and Post-Sales Support
- ★ Database design
- ★ Individual Training schemes

Candidates should have at least two years' COBOL experience and will be offered good commencing salaries and an excellent career path with opportunities for project leadership leading to managerial positions.

Ref. NI 0308

24-hour answering service
Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 0981

JBA

Assistant Section Manager up to c.£7,300
Programmers up to c.£5,500

Cheshire

A leading UK industrial service organisation is undertaking a major expansion programme around a powerful ICL 2980 system which necessitates immediate appointment of new staff.

Programmer applicants must be experienced in FORTRAN and COBOL, with design and implementation experience of scientific or commercial systems (batch or R/T).

The senior post is open to degree level candidates with a proven record of installation policy management, plus experience of staff organisation and liaison with suppliers of hardware and software. The successful candidate will have a programming background in FORTRAN, COBOL and batch/RT processing.

First class opportunity to enjoy exceptional service conditions of employment in a pleasant working locale. Contact: Mike Creamer

Marketing Support Analysts

West London up to £7,000 + car

This company is seeking self-motivated analysts, ideally from a communications systems environment who would like to apply their talents to marketing a first class product and offer pre/post sales support. Applicants will be readily considered who have a fairly broad knowledge of the d.p. industry, particularly the terminal systems market; some background in technical programming and analysis is a definite bonus.

The company will offer a generous salary commensurate with experience, a prestige company car (including private mileage) and a definite career path. Contact: Mike Creamer

System Ten Programmers

Berks up to £6,500

A well established international organisation has vacancies for programmers to join a team developing commercial systems. Candidates must have at least two years programming experience, for the junior positions, together with some systems design for the more senior vacancy. A background in commercial and financial applications would be an advantage.

This is an exciting opportunity to work in a professional team where the working environment and prospects are excellent. Salary negotiable with large company benefits. Contact: Andy Wright

COBOL Programmers

Surrey Start to £6,900 + BUPA

Specialising in the provision of conversion services to installations changing or upgrading their hardware, this company requires good COBOL programmers to help them stay on top of the most up-to-date computer technology.

Their Richmond headquarters services both Europe and UK, so after initial training you could find yourself spending short periods abroad *supported by generous Tax-Free allowances on top of your salary.* If you enjoy programming, would welcome the chance of travel and variety, and relish the idea of keeping constantly in touch with modern equipment and ideas, you may fit into this challenging and exciting environment.

First class training and promotion opportunities, relocation expenses and free life and health insurance are some of the substantial benefits available with this company. Contact: Andy Wright

Systems Analyst

Leicestershire c.£5,500+

This well established toy manufacturer is currently in the process of designing a new Materials Requirement Planning System on their new IBM 370/115 under DOS/VS, using TOTAL.

They require a Systems Analyst, with experience of Bill of Materials based systems, to undertake a large part of the design work and see it through to implementation. COBOL is the main programming language, although programming experience is not essential.

An attractive package is on offer for the successful candidate, including a realistic starting salary to be reviewed twice yearly, plus a profit sharing scheme (10% of salary for the last two years) and free BUPA.

Contact: Andy Wright

Junior Technical Author

Italy Negotiable (incl. Tax free exp)

The small documentation team assigned to a major manufacturing company near Rome now has additional projects and seeks assistance on a fairly long-term basis. Applicants should be either practising junior Technical Authors (software) or programmers with experience of mini computer systems. Some writing background is essential. The successful candidate will be single, able to start at fairly short notice and willing to develop his or her career within a leading consultancy organisation.

Call to discuss this vacancy in particular. We also have many others in Holland, France, Norway, and the UK. Contact: Mike Creamer

For further information on any of the above vacancies please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

NEW

TECHNICAL SUPPORT POSITIONS

IN OUR PROFESSIONAL SERVICES DIVISION

Our Professional Services Division provides a wide range of consulting services to Industry, Commerce and Government – both independently and in support of our Systems and Data Services divisions. These new positions arise in expansion of our technical support group involved in pre- post-sales assignments.

WHO IS CONTROL DATA?

WE are a computer company employing 41,000 people worldwide

WE have a firm commitment to the computer industry, the United Kingdom and the training and advancement of people

WE are a world leader in the provision of computer services, large-scale computers and peripheral equipment.
This position is continually strengthened by our ongoing investment into more advanced products and services. Such a range of activities presents considerable scope for the advancement of personnel at all levels and disciplines.

WE offer a challenging and rewarding career opportunity with involvement in software development, installation and support, together with some sales-related activities in the areas of system configuration and benchmarking.

WE are looking for technical people of the highest calibre and offer salaries and associated benefits commensurate with the demands of the post.
If you have the qualities and experience we are seeking – please read on.

WHO ARE YOU?

YOU will be intelligent, enthusiastic, articulate and self-motivated.

YOU will be at least 25 years' old with several years' systems software experience. A knowledge of Control Data's Cyber 170 operating systems, particularly NOS/BE, would be advantageous.

YOU may have a degree in computer science but more essential is a sound knowledge of operating systems, the ability to quickly comprehend new concepts and to communicate with customers.

YOU may expect the possibility of travel in the U.K. and Europe.

Please write to Mrs. Margaret Spence with full details of your career to date.

Professional Services Division, Control Data Ltd., 22a St. James's Square, London, S.W.1. Telephone 01-930 7344.

CONTROL DATA

MORE THAN A COMPUTER COMPANY

USER SUPPORT PROGRAMMER

The Daresbury Laboratory, located in the Cheshire countryside, is developing major national facilities for research into atomic, molecular, solid state and nuclear physics. Exploitation of these facilities requires first-class computing support. Computers at the Laboratory include an IBM 370/165, GEC 4070's, PDP-11's and Interdata's

We are looking for young people, male or female, to fill vacancies in the User Support Group which is responsible for providing general support for users of our computing facilities. Previous experience of computing whilst advantageous is not essential as training will be provided.

Appointment will be made at one of two levels:

(a) Assistant Scientific Officer – applicants under the age of 27 should possess GCE 'O' level, or CSE Grade 1, passes in at least 4 subjects including English Language, or Literature, and Maths or Physics. However applicants with 'A' levels would be preferred.

Salary: fixed according to age, on the following scale: £1,775 to £3,303. Examples of starting salaries are £1,775 at age 16, £2,338 at age 19, £2,731 at age 22 or over. Older candidates might receive additional increments if they have previous relevant experience.

(b) Scientific Officer – applicants should possess a good honours degree in a relevant subject.

Salary: fixed according to qualifications and experience on the following scale: £2,839–£4,415.

There is a generous leave allowance and a non-contributory pension scheme for both grades. The Laboratory also operates a flexible working hours scheme.

Closing date: 18th August 1978.

Application forms can be obtained by telephoning Warrington 65000 Ext. 467 or writing, quoting reference number DL/636/BV, to:

The Personnel Officer

DARESBURY LABORATORY
Science Research Council
Daresbury, Warrington WA4 4AD

SENIOR TIMESHARING SALESMEN

(Manager Designate)

MANCHESTER

BASE SALARY to £6,500 plus Commission and Commission accelerator plus Company Car

Our Clients are a highly successful timesharing organisation whose commitment to commercial applications and customer training has ensured their success within the United Kingdom. They are now expanding their client base in the North of England from a Manchester location. They offer a full range of timesharing packages with particular specialisation and success in the area of Database management.

This represents an excellent opportunity for a Salesman with a proven track record within the industry to head the Manchester operation. The responsibilities of this Manager Designate will grow with proven results.

Excellent technical and marketing support will be given to the successful candidate and other benefits include Company car (all mileage paid), training in the United States, excellent commission accelerator, BUPA and life assurance.

CONTACT: Sheila Bradbury on 061-833 0427

SPECIALIST COMPUTER RECRUITMENT LIMITED

SCR

BIRMINGHAM 021-236 3781
Freepost, Equity and Law House,
35-37 Great Charles Street Queensway, Birmingham B3 2BR
MANCHESTER 061-833 0427
Freepost, Blackfriars House, The Parsonage, Manchester M3 8BB
LONDON 01-935 0671
Freepost 6, 102, Blandford Street,
London W1E 1JZ

Computing Services Association

We're switched on – are you?

The brand new multi-million pound, purpose-built Data Centre of BL Cars is one of the most advanced computer technology centres in the world and utilises a sophisticated microwave network carrying traffic between 48 locations.

The first part of the project has been completed to schedule and the second phase, to transfer all existing IBM mainframes within the company must be finalised by the end of this year.

To enable future implementation dates to be met the following professional operations personnel are required:-

Shift Leaders
Senior Computer Operators
Computer Operators

Ideally you will have experience in at least three of the following DOS/VS, VS1, HASP, MVS, TSO, IMS or CICS. More important you should also have a genuine interest in computing as a career and not just be a button pusher.

Benefits are those you would expect of a major company and include salary up to £5,700 including shift allowances, 5 weeks' holiday, pension/life assurance and sick pay schemes and substantial discount on BL Cars and accessories. Generous relocation assistance will be provided as necessary to this pleasant rural area where housing is favourably priced.

So, if you are looking to develop your career in an exciting environment, using advanced technology and the idea of internal and external training appeals to you, ring Rod Watts on Redditch (0527) 28515 or alternatively write for an application form to

Operations Manager, BL Cars Limited, Data Centre, PO Box 5, Redditch, Worcs

BL Cars Limited

Computer Appointments

ANALYST/PROGRAMMER £5,500

PROGRAMMER £4,750

HOUSING AVAILABLE

Our Client, one of Europe's largest suppliers to the Engineering Industries, started off as a family concern. Having been bought by one of the UKs largest Companies, it still retains its family atmosphere. To them people count.

The emphasis is on Development and On-Line work. It is moving through On-Line Order Entry to a Stock Control System, and Production Control, using an ICL 2904 and RPG II.

The Analyst, who will be based in King's Norton, will need System 3, 32 or 34 experience. He will be responsible to the DP Manager and will be liaising at Director level.

The Programmer, who must have 2903, 4 or 1900, and On-Line experience, will be based at Redditch.

For both positions RPG II is a must.

PHONE BILL BYRNE ON 01-439 6299

(REVERSE CHARGES)

Computer Appointments

Regent House, 54-62 Regent Street London W1A 4YJ Tel 01-439 6299   *a division of Graduate Appointments Ltd*

MYRIAD
APPOINTMENTS
LIMITED
Computer Personnel Consultants

BUSINESS ANALYST

LUTON **NEW 2960 INSTALLATION** **c £6200**

Our Client, a major British Industrial Company, wishes to appoint a Business Analyst within their central management services department.

The Business Analyst will hold responsibility for various assignments within production divisions and will supervise the relevant applications development personnel using the computer installation's new ICL 2960 hardware.

Candidates should have a proven record of successful systems implementation and possess the necessary personal qualities and experience to represent the department in co-ordinating requirements of General Management and involving travel to the operating divisions within the U.K.

In addition to an excellent benefits package the person appointed can look forward to a positive career path within an expanding department where rewards are closely geared to one's personal achievements.

Ref. N3 0308

24-hr. answering service
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01-353 0981

Ludbrook

STOP PRESS!! EXCLUSIVE!!

REAL TIME PROGRAMMERS
(Home Counties)

The success of this new multi million pound contract is dependant on the recruitment of **superior** real time programmers.
At least 18 months experience, preferably in a scientific environment would be invaluable, although this should not preclude commercial mini buffs from applying for these exciting projects.
Register **NOW** with the foremost D.P. recruitment bureau in the East Midlands.

Contact in the strictest confidence Paul Bell - Leicester (0533) 52314.
LUDBROOK MANAGEMENT SERVICES
1 East Gates, Leicester.

UNIVERSITY OF SURREY

COMPUTING UNIT

SENIOR COMPUTER OPERATOR

Up to £4121
(plus pay award pending)

Six week's annual leave. Excellent sports facilities and social amenities. Very pleasant surroundings on University campus

We need a young (but reasonably experienced) operator, with the ability and confidence to take charge of our computer room when the Shift Leader is absent. We have several computers — mainframes and minis. There is an unusually wide variety of job mix — scientific and data processing — batch and multiaccess. Three shifts, five day week.

For further details, or to arrange an informal visit to the Computing Unit, please telephone Miss A. MacDougall, Secretary to the Operations Manager, on Guildford 71281 ext. 470/468

For an application form, write to the Staff Officer, University of Surrey, Guildford, Surrey GU2 5XH, or telephone Guildford 71281 ext. 462

Systems Analysts

Starting salary up to £7000 p.a.

The construction industry offers a unique opportunity to develop systems in areas which are relatively unexposed to computerisation.

Could you:

— design a system to estimate the cost of a multi-million pound building project.

— integrate into that system, a project control system to ensure outputs and costs are effectively controlled.

— integrate resource scheduling to maximise on-site profits.

These are just a few of the many areas our client wishes to computerise to ensure continued competitiveness and success in the 1980's.

Their current computing needs are met by:

★ IBM mainframe
★ TP network based around 3270
★ Timesharing
★ TOTAL Database (under investigation)
★ On-line program development techniques

If you have a proven track record of systems design and implementation, the ability to lead a project and communicate at senior management level, then you would find this a very exciting environment in which to work.

Our client is based in North West London and offers a bonus system, free BUPA membership and Life Assurance, 4 weeks' holiday. Ref: 1825/CW.

Please contact Marilyn Black.

Computing Services Association

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER
Goldsmith Recruitment International Ltd., 15 Buckingham Palace Road, London S.W.1.
Tel: 01-828 5356 – 24 hour answerphone service.

GOLDSMITH RECRUITMENT INTERNATIONAL

Where to lay hands on the most exciting software work for experienced people

Just for a moment don't worry who we are or what our business is.

If you've developed noteworthy experience as a software professional you'll have covered quite a wide range of applications. Financial packages, management information, stock control, payrolls, will all have grown under your touch. So where do you go from here?

We don't operate in any of those areas. We produce highly sophisticated electronic systems, each of which needs specialised computers and software packages.

Don't think for a moment that you can't handle it. The transition from commercial to a technological based environment is possible with the added rewards of greatly increased job interest and a personal involvement with a real-time on-line system.

Quite a few people have done it before you, and one of them has this to say: '... our department can offer a more complete spectrum of work than any other company. Mini computer, micro computer, application packages, standard software, compilers, operating systems, techniques and specialisms. The disciplines involved ... the career development ... the potentiality for line management ... all contribute to a good career.'

You'll have a say in the definition of complete systems. You'll work through each project from design to on-line testing, and liaise with customers to determine their exact requirements. Since the systems are central to the product itself, you'll rub shoulders with specialists from other technical fields and gain an understanding of their activities. We're talking about very advanced projects, with sophisticated fail safe and standby facilities, rapid response times and modern man machine interfaces.

We need

Senior Analyst/Programmers

with five years software experience,

Consultants

with eight years programming and analysis experience.

Salaries will be commensurate with qualifications and experience and will be competitive.

All positions are open to men and women.

The only way to find out just how exciting this work is, and how rewarding, is to contact us.

Please write immediately to D. C. J. Watkins,
Software Manager,
Marconi Radar Systems Limited, 'Freepost'
Chelmsford, CM1 3BR,
Essex. (no stamp required)
Tel: Chelmsford (0245) 67111.

Wellcome

The Wellcome Foundation Limited is a major British-owned international pharmaceutical company. We have recently completed our new, purpose-built Computer Centre and acquired a new configuration, comprising of an IBM 370/145 and 370/148.

We now wish to further strengthen and enlarge our present operating staff and can offer attractive opportunities on a 5-day week — 2-shift system (8 am-4 pm/4 pm-midnight), to

Senior Operator

c £5000 inc. Shift Allowance

to lead a team of operators. Candidates should have at least 2 years' experience using OS/VS1 or MFT. Experience on OS/VS1 JCL would be a distinct advantage. REF FY/754/1

Operator

c £4200 inc. Shift Allowance

Candidates should have at least 12 months' experience using OS/VS1 or MFT. REF FY/754/2

For both posts, a good working knowledge of VM/370 and/or IMS would be desirable but not essential as comprehensive training will be given, where necessary.

Prospects for career development within the Computer Division and other functions of the company are excellent.

First-class benefits include generous assistance with relocation expenses, where appropriate.

For more information and an application form, please telephone or write, quoting the appropriate reference, to

K. Grieve, Personnel Officer
The Wellcome Foundation Limited
Temple Hill, Dartford, Kent
Tel Dartford (32) 23488, ext. 2283.

UNIVERSITY COLLEGE, LONDON

A new research project will involve theoretical analysis of network protocols, simulation of and experimentation with several computer networks including EURONET, EPSS, ARPANET and SATNET. These facilities available include several PDP 11 computers, access to many networks, and on-line use of large remote Host computers. Emphasis of the research will be on protocol hierarchies including the X25 Access Protocol.

A SENIOR RESEARCH FELLOW

is required to direct the theoretical aspects of the project. A degree, a strong theoretical background with proven research ability are necessary qualifications. Experience of Computer simulation and/or analysis of computer communication procedures are important. Salary range £5,500-£8,090.

AN ENGINEER/TECHNICIAN

is needed to help maintain the PDP 11 computers and the communication equipment. Duties include design and construction of terminal interface equipment. Salary range £4,000-£5,500.

A RESEARCH ASSISTANT/PROGRAMMER

is needed to participate in the practical aspects of the project. A degree and programming experience, preferably with real-time mini computers, are important qualifications. Salary range £4,500-£5,500.

Applications by September 4th to Professor P. T. Kirstein, Department of Statistics and Computer Science, University College London, Gower Street, London WC1E 6BT.

Computer Programmer

Letraset International have recently installed a PDP-11/34 mini-computer, providing computer facilities to UK operating centres based in Central London and Ashford, Kent.

Current developments are in both manufacturing and financial areas within the company.

The successful candidate will join a small team providing commercial systems and programming support to these operational centres.

Applicants should be capable of working with a minimum of supervision and be educated to at least 'A' level. Eighteen months' experience of BASIC PLUS programming is essential and a knowledge of R.S.T.S. is desirable.

The company offers above-average terms and conditions of employment including 4 weeks' holiday and a 4½-day week.

For an application form, please contact

Peter Meier
Personnel Officer
LETRASET INTERNATIONAL LIMITED
Kingsnorth Industrial Estate
Ashford, Kent
Tel: Ashford (0233) 24421

Letraset

COMPUTER RECRUITMENT DIVISION

OPERATORS

DEC SYSTEM 10
£3,000+
JUNIOR OPERATORS for West End bureau. Varied workload, excellent benefits and solid career prospects in return for 6 months plus experience.

UNIVAC 9400
£4,500
SENIOR OPERATOR for international City based manufacturers. Any Univac experience (1 year minimum) acceptable. Outstanding prospects. Good perks.

BURROUGHS
£3,500 inc
JUNIOR OPERATORS with 6 months plus experience. City based co. Prospects excellent, perks include 4 weeks hols, LVs, season ticket loan.

IBM 370/138
to £4,200+
JUNIOR/SENIOR OPS with POWER VS experience and Shift Leader/Programming potential for the Southern Home Counties. High shift allowance and good benefits.

ICL 1903T
£4,500+
SENIOR OPERATORS (GEO II + MAN) for North London installation. Around 18 months' exp. 2 shifts, 4 weeks' hols, staff restaurant and ticket loan.

IBM 370/135
£4,000+
With 18 months' experience and DOS/GRASP knowledge. It's with a famous City Bank and benefits include a CHEAP MORTGAGE. Top prospects.

PROGRAMMERS

RPG II PROGRAMMERS
£4,500-£5,750
A fantastic opportunity to join this world-wide financial concern running IBM SYS 3/12, SYS 32. Exciting growth potential and CHEAP MORTGAGE.

BAL & PL1 PROGRAMMERS
£4,800-£7,200+
A prestige City institution offers challenging career prospects in a dynamic environment. Perks include flexi hours and a subsidised canteen.

IBM DOS/OS COBOL PROGRAMMERS
£3,800-£5,500
Outstanding career prospects await Programmers with 1 yr. + experience in London, Surrey, Herts and Middlesex. Opportunities include training to DATA BASE. Perks include CHEAP MORTGAGE.

MINI SPECIALISTS
£3,500-£7,000
If you're a Mini Programmer involved in Technical or Commercial applications with experience of Mini Assembler, BASIC + RSTS or CORAL 66 then call for details.

ICL COBOL PROGRAMMERS
£4,200-£5,500
A sophisticated technology user needs to boost its Programming team. They have a large ICL 1900 installation and offer excellent career prospects and benefits.

INTERVIEWER/PROGRAMMERS
£7,000-£10,000
Outstanding opportunities exist for Recruitment Consultants with a background in Systems and Programming within the Staffscene organisation. It's a fast moving environment offering unlimited potential for the right people.

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LONDON EC4
01-353 6931

University College Hospital

Intermediate Systems Designer/Programmer

To lead a small team working on the expanding Pathology data management and on-line acquisition system, and the design and implementation of a Haematology Laboratory system.

The system is on a C.T.L. Modular One computer with disc backing store. The job offers considerable scope for experience in design, programming and implementing a computer system in a real time environment. The successful applicant will be expected to adopt a disciplined professional approach, and must be used to working to time schedules.

Applicants should have at least 3 years' experience in computing. A knowledge of Modular One, Coral 66 or Medical Computing would also be advantageous. Salary including London Weighting £5,313 - £6,379.

Application forms and further information can be obtained from Personnel Department, University College Hospital, Gower Street, London WC1E 6AU. Tel. 01-387 9300, Ext. 381, quoting Ref. CW/LSD/SP. Closing date 13th August, 1978.

SENIOR SYSTEMS ANALYST

Worcester/Birmingham

Redman Heenan International is an engineering Group of some 16 Companies and £30m turnover and a performance record showing improvement each year since 1971. They are currently restructuring and expanding their Group D.P. Service and seek a Senior Systems Analyst.

He will identify systems needs in the manufacturing and engineering activities, and develop and implement systems as required. He will control a systems team of analysts and programmers and will report directly to the Group D.P. Manager.

He must have in-depth experience of designing systems for manufacturing control applications and some programming experience (preferably COBOL and RPG). He will be analytical in diagnosis; imaginative in solution. Critical factors are technical ability and the personality to achieve results. Age is flexible. An attractive remuneration package will be offered.

Please telephone N.F. Churchill,
Executive Resources Ltd.,
City Centre House,
Union Street,
Birmingham B2 4SR.
021-643 6071.

CANADA

PROGRAMMER/ANALYST

£8,000 to £10,000

We are the Canadian Division of a multi-national textile company with its head office in the U.K. We are seeking a high calibre individual to participate at a senior level in the development of real time systems using an ICL 2904 computer.

Applications are invited from candidates who are experienced in the following areas

- ★ Solid ICL programming experience using COBOL
- ★ Experience in programming real-time systems
- ★ A sound knowledge of ICL software, and in particular TPS on-line software

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ROADS DIVISION

ENGINEER/ PROGRAMMER

(Computer Section)

Tech "O" — £3833/£4451
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Canvassing directly or indirectly will disqualify.

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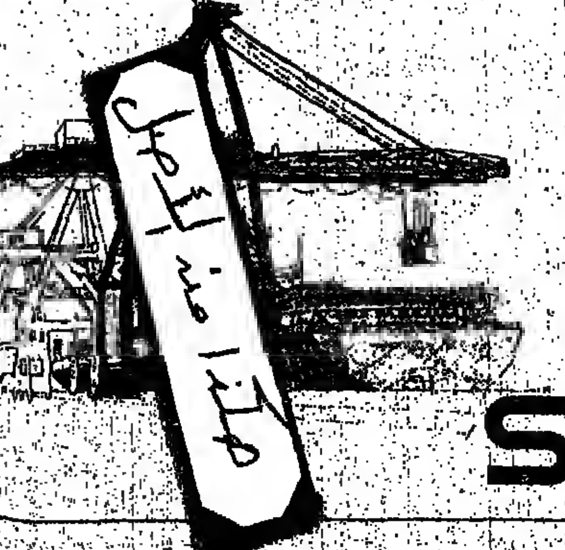

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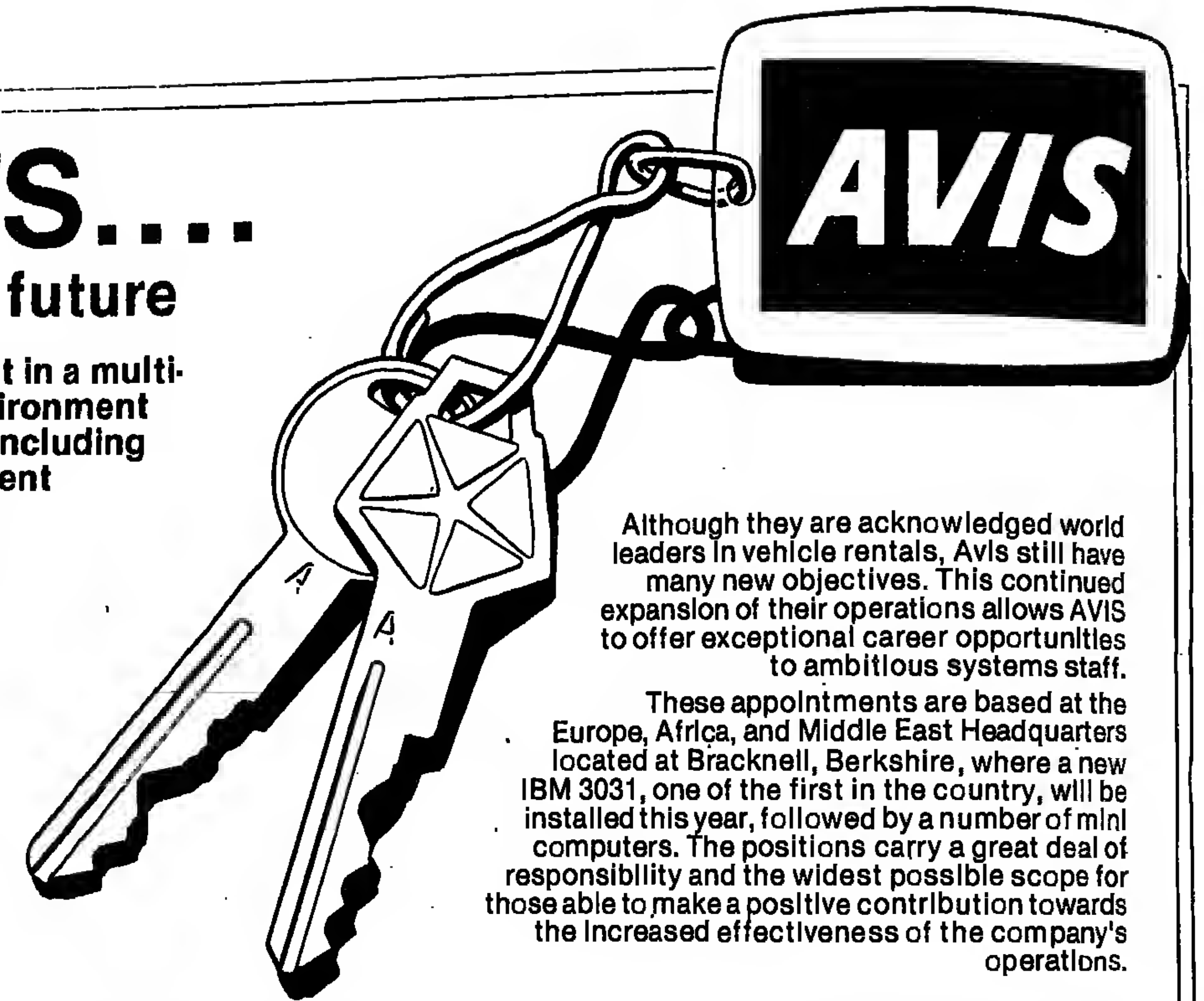
Your experience will be at least two years of systems design and implementation, coupled with a flexible approach and the ability to "think on your feet". A decided asset would be exposure to one of the following: mini-computers, distributive processing, IBM mainframes, financial and/or general commercial systems.

People with less than the above experience, but who feel they have the potential to succeed in this professional environment, are also invited to apply.



Although they are acknowledged world leaders in vehicle rentals, Avis still have many new objectives. This continued expansion of their operations allows AVIS to offer exceptional career opportunities to ambitious systems staff.

These appointments are based at the Europe, Africa, and Middle East Headquarters located at Bracknell, Berkshire, where a new IBM 3031, one of the first in the country, will be installed this year, followed by a number of mini computers. The positions carry a great deal of responsibility and the widest possible scope for those able to make a positive contribution towards the increased effectiveness of the company's operations.

All contact through Capp Associates CROYDON office, telephone or write quoting ref: CG 181-8S.

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Computing Services Association

Glaxo Holdings Limited

Shift Leader

(Two shift system)

Not Less Than £4600 + Company Bonus

A vacancy has arisen for a shift leader to work in the Company's Computer Centre located at Graham Street, London, N.1.

The installation consists of an ICL 1903T (126K) EDS60s MTs, etc., supporting a VDU and RJE communications network. In addition a Hewlett Packard 3000 (½ megabyte) will be installed in October.

The successful candidate is likely to be in his or her mid-twenties, educated to 'A' level standard, have over 3 years' 1900 operating experience, be conversant with George II and ICL software. Experience of communications equipment would be an additional advantage.

The remuneration indicated above includes Shift and London Allowances. Fringe benefits include subsidised staff restaurant, sports and social club, 4 weeks' holiday and free car park.

For an application form please write to Miss S. G. Ross, Glaxo Holdings Ltd., Graham Street, London N1 8JZ, or telephone Miss T. Hayne, 01-493 4060, ext. 237.

PROGRAMMER/ SYSTEMS SUPERVISOR

S.F.I.A. Educational Trust, a charity, have recently installed an NCR 8250 to deal with the termly payment of school fees.

We are currently seeking an experienced Programmer to join and lead our small but rapidly expanding D.P. installation (expansion in both systems applications and hardware editions).

Candidates should have a knowledge of Cobol 74 and Imos operating systems.

Commencing salary will be dependent upon age and experience, and a company vehicle will be provided.

To obtain an application form please write to:

Mrs. D. M. Holmes
S.F.I.A. Educational Trust
10 Queen Street, Maidenhead, Berks.
Or Telephone: Maidenhead 34291

UNIVERSITY OF EDINBURGH
CENTRE FOR EDUCATIONAL SOCIOLOGY/PROGRAM LIBRARY UNIT

PROGRAMMER

A graduate with either an M.Sc. or employment experience in computing is required for a one-year programming and data-management post, working primarily with social science data under supervision in the CES. There will also be a minority-time attachment to the PLU. A knowledge of IBM or ICL JCL would help. Salary on the GO2 scale in a point between £3680 and £4601. Commence September/October. Apply direct with full curriculum vitae and [illegible] Place, Edinburgh. Please quote Reference 7018.

PROGRAMMERS OPERATORS

A warrant is out for your arrest. You are summoned to Phone

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01-491 3856
[illegible]

International Opportunities at our European Software Technology Centre

Salaries in the range £3500 to £7500

Bedford based

In our European Software Technology Centre, which is being expanded to handle work for the whole Texas Instruments corporation world-wide, we have the following career opportunities offering the chance to work on an international basis with the most advanced technology in the field. They provide the chance to travel to Europe and to the company's sites in Dallas and Houston in the USA. The option to transfer overseas at some future date is a strong possibility.

Microprocessor Software Engineers

with a degree in maths or computer science and preferably some assembler programming experience. A knowledge of PASCAL would be an advantage. Self motivation and the ability to communicate well at a technical level are essential.

Fortran Programmer

to work in the design automation area developing large suites of programs on our corporate information centre IBM 370/168 complex. A science degree and some experience of technical Fortran programming are essential.

Salary reviews and promotion prospects are entirely merit based and benefits include generous assistance with re-location expenses where appropriate, profit sharing, assistance with obtaining mortgages, subsidised staff restaurant, health insurance and pension plan.

For an application form, please telephone Bedford 67466, ext. 3226 or 3227, or write to Ann Stevens, Personnel Department, Texas Instruments [illegible]

هكذا من الأصل

EXAS INSTRUMENTS
LIMITED

LOGISTIX

Data Processing Recruitment Consultants

European Data-Systems Manager Berkshire (European+US Travel)

Salary: Circa £8 - 9K ∓ Expenses and Relocation

A leading US Electronics and Data Products Corporation has retained Logistix to assist in recruiting a European Systems Development Manager to be based at their Berkshire European Headquarters with total responsibility for Systems Development for all their European offices. This very important appointment will appeal to those who enjoy overseas travel in particular to the United States and throughout Europe.

The company is currently planning a comprehensive European network comprising mainframe and mini computers with a data-link to their host IBM 370/155 in California. It is anticipated that the successful candidate may be instrumental in advising on the configuration of hardware to replace the present stand-alone mainframe.

A five year forward planning computerisation programme has been drafted and it will be the responsibility of the newly appointed Systems Development Manager in co-operation with the U.S. development team to enhance and further develop broad-based financial, inventory control and communications systems for implementation throughout Europe and the U.K.

This unique opportunity will ideally suit a self-starter with a strong mini computer background and solid systems design experience gained either with a major software house or a sophisticated end user using linked computer systems. Familiarity with COBOL could be useful; however the decision for its use has as yet not been finalised.

The successful candidate will be joining a large Corporation whose products are marketed in over 100 countries with over 11,000 employees world-wide, producing sales of $300 million in 1977; sixty per cent of those sales were attributable to products not in existence 5 years ago, developed through technical commitment to main-stream and tangent technologies.

The high salary reflects the importance which our client places on the filling of this appointment and important fringe benefits normally associated with a major US Corporation are of course provided.

Interviews will be held within 2 weeks of the publication of this advertisement and it is anticipated that an offer will be made within ten days of interview.

Ref 19/A

Coral 66 Programmers Contract–South Coast

to £300 p.w. (9 months)

One of Britain's foremost Hardware design and development groups urgently requires three additional team members for one of its CORAL 66 prestige projects. Whilst the hardware selected is DEC PDP 11 it is not essential that applicants are conversant with RSX-11M although it will be necessary to become familiar with that operating system.

Of prime importance is very sound current CORAL 66 experience (minimum 18 months) and the willingness to locate Monday to Friday at the company's south coast headquarters. This unique opportunity is likely to appeal to those interested in frontier technology of a demanding and stimulating nature.

Only applicants available at relatively short notice can be considered for these posts. There is a definite possibility that the project will extend beyond 9 months and could if desired lead to a permanent position.

Informal interviews will be held as soon as is practicably possible with a view to commencement prior to mid August.

Ref 19/B

Senior Mini Specialists Holland

Salaries: £9.5—15K.

Our Client is a major International Systems and Software Development Group recognised as Market-leaders in their field. Owing to continued expansion in a wide variety of applications areas including Data Communications, Message Switching, Computer Networking and Mini Computer Software, a significant number of experienced permanent personnel are urgently required.

Emphasis will be placed on technical achievement and in-depth experience in the areas of activity outlined above. Whilst a degree or equivalent qualification in either Computer Science or Mathematics is desirable, significant relevant experience will be considered in lieu. Of essence is a solid Assembler background within a Mini-computer environment. Project locations throughout the Benelux provide a wide and interesting environment which include Amsterdam, The Hague and Rotterdam. Of prime importance is demonstrable enthusiasm to relocate to the Netherlands for an extended period. Every assistance will be given in relocation, including cost of removal of all personal effects, initial accommodation expenses and a resettlement advance.

Interviews will be held in London during August and offers of employment will be made within 10 days of interview.

Ref 19/C

IMS+Database Holland+London

Salaries: Holland £15K+ London £7K+

One of the Worlds foremost Software Specialist Groups (not body shop) with H.Q. in the U.S. have asked Logistix to identify top calibre IMS programmers up to Team Leader level and beyond for permanent positions in Holland and London with the option to transfer for a limited or extended period to the U.S.

Suitable applicants must have current IMS (DB or DC) applications or systems programming experience using COBOL, PL/1 or BAL with DL/1. It is anticipated that candidates will have worked with IMS applications for 2 years or longer.

Applications cover on-line enquiry systems, banking, sales ordering, stock/inventory control, budgeting and forecasting etc. The scope of projects and the prestige of working with this acclaimed Market Leader will be certain to appeal to the most demanding career minded individuals. The high salaries reflect the prominence which our Client places on the acquisition of these key personnel who are certain to rise rapidly to Consultency or Management levels.

Ref 19/D

Logistix, Freepost 32, London W1E 3YZ
01-491 4636 (Reverse charges)
Telex 28800

LOGISTIX

Avon House, 366 Oxford Street, London W1N 9HA

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Computing Services Association

CONTRACT SYSTEMS ANALYST

South Herts.

We have an urgent requirement for a contract Systems Analyst with a sound professional background to join a client on a long-term basis. Applicants must have good commercial IBM experience and be available to start immediately or within the next 2/3 weeks.

For more information ring:
(from 2 p.m. Monday, 7th August, onwards)
HAYMARKET COMPUTING LTD.
Tel: Cuffley (Herts.) 4130
up to 7.30 p.m.

The University of Aston in Birmingham
Computer Centre

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An ICL 1904S provides the main service for the University and the work will involve the maintenance and development of the systems software provided. Applicants must hold a degree or equivalent. Salary within the Other Related 1B Scale — £3186 to £5262 per annum.

Application forms available from Mr A. G. Rees, Staffing Department, The University of Aston in Birmingham, Costa Green, Birmingham B4 7ET, quoting ref. no. 0/055/CW.

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SYSTEMS ANALYST £6,000+
N.W. LONDON

A substantial manufacturing Co. has a vacancy for a Systems Analyst. Knowledge of RPG 11 programming, experience of Disk/Floppy Disk systems, mini/small business computers useful. Applicants must have experience of commercial applications from feasibility study, through to implementation, and have a good understanding of business organisation, systems and objectives.

PL1 PROGRAMMERS
FARNBOROUGH To £5,500

A large progressive Co with an IBM mainframe offers exciting demanding positions for ambitious PL1/COBOL/PLAN/ASSEMBLER or BASIC programmers. Lots of development work is planned which will provide first class opportunities for both job and career development. Annual bonus. Flexi-time, etc

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Employment Agency Suite 14, Dryden Chambers,
119, Oxford Street, London.W1R 1PA Tel: 01-434 1106

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If you like the idea of working for a small Software House in Mayfair, and have 2 or more years' experience programming in commercial BASIC — we'd like to hear from you.

There are six of us at present, and we work in APL and BASIC on timesharing systems and minis. Clients range from small businesses buying their first computer to multi-nationals with interactive systems accessed from all over the world.

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Your first job will be helping replace a large 168 with a 3033. The present system supports 150 terminals both local and remote.
Your knowledge of large IBM mainframes will help ensure this upgrade is as smooth as possible. The greater your abilities on this type of architecture then the more varied will be your field of responsibility. Knowledge of German is not a prerequisite but any you have will make settling in easier.

RW31/5

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Are you Project Leader material? Would you like to earn a realistic salary for your efforts? Is your spoken and written German up to scratch? A proven record of completed projects preferably with some Insurance business exposure could secure you this leading post.
You will be working on major new Systems with early promotion to Project Leader if you make the grade.

RW 31/6

Telephone GEOFF MARSH on 01-499 4501 any time (24-hour answering service), for more information. If you prefer, you can ring him at home on GARSTON 79536.

CHALLENGES IN REAL-TIME SOFTWARE

North London

TEAM LEADERS

Up to £7,000 + Relocation

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Up to £6,000 + Relocation

Our client — a major international corporation — is undertaking a large real-time Development project which is expected to have a major impact on national life in the eighties.
The ultimate operational system will be genuinely real-time providing an on-line service 24 hours a day, every day of the year. The highest degrees of technical integrity are therefore sought and, as you may imagine, the hardware includes many interesting specials.
The software development function currently has vacancies at senior levels to produce software concerned primarily with on-line data collection, fault analysis and peripheral handling on minis and micros, and data communication with a mainframe.
All the openings below offer a real challenge for the dedicated software professional with his technical sights set high and seeking the stimulation of working with other technical high flyers.

Specifically our client is seeking the following people:

1. A SENIOR SOFTWARE PROGRAMMER with a good knowledge of processor hardware to head a small group of three people developing a maintenance system. Ref: RW 31/7
2. A SENIOR APPLICATIONS PROGRAMMER with experience and proved technical capability to join an applications team engaged on systems for interactive data analysis. Ref: RW 31/8
3. A TEAM LEADER initially to join a team of six engaged on the design of a peripheral handling system. Subsequently the person appointed will lead the implementation of the system. Ref: RW 31/9
4. A TEAM LEADER to take charge of a team of four engaged on the technical design of software to drive interactive terminals. Ref: RW 31/10
5. A TEAM LEADER to be responsible for the development of applications programs for interactive analysis. Ref: RW 31/11

All the above posts are situated in residential North London, within easy access to housing at all price levels and abundant social amenities. The positions all carry competitive salaries and large company fringe benefits.
If you have practical experience in any relevant field (e.g. process control, command and control systems, or systems software design) we should be pleased to hear from you.
Telephone TONY BAKER on 01-499 4501 any time (24-hour answering service), quoting appropriate reference number, for more information. If you prefer you can ring him at home on 01-445 3512 evenings or weekends.

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Hardware & Software Support

Middlesex & Travel £7,000-£8,000 K.

The Electronics Division of a Multi-National Company based in Middlesex need to increase their support teams on MINI Hardware and Software Projects.

Candidates with a background of Hardware, Software or Systems Support in Communication, Networks, Mainframe Interfacing or similar fields are invited to apply.

Career development and stimulus will certainly be offered through working with Distributors on the widest involvement of projects, product, and sophisticated communications network.

Additional responsibilities will include Product Evaluation, and Testing, Management of Training Resources, Establishing Standards, Pre and Post Sales Support and reasonable travel throughout Europe and further afield.

Ref CW 31/1

Programmers & Analysts

up to £[illegible] + car

NCR [illegible]/NEAT 3 London

An exciting opportunity has developed for ambitious Programmers and Analysts to join a medium size, expanding computer company involved in automotives and finance industries.

Our clients computer operations are based on NCR CENTURY 75, current plans include up-grading to a CRITERION Development is in progress on an interactive on-line communications system using audio response equipment on a nationwide basis.

Programmers are currently required with one year's COBOL on the NCR 8000 series. Experience of IMOS would be advantageous. we also need Programmers with 18 months NEAT 3 on Century machines

Continual company growth based on the development of external customer's systems, guarantees excellent prospects for suitable employees.

Ref CW 31/2

SA/Programmer Programmer Senior Operator

Dublin £4,500-£7,000

Our client, a major international company with an expanding OP department require the above personnel for future development. The company uses IBM hardware for processing its commercial and financial applications

They require at least two years' COBOL programming experience for both positions plus exposure to systems design for the Analyst Programmer job. The Operator will need sufficient experience to be in charge of day-to-day running

In addition to excellent salary and fringe benefits, relocation expenses will be paid where applicable.

Rof CW 31/3

Technical Writers

Switzerland up to £16,000 p.a.

We wish to recruit 2 experienced technical writers for permanent positions with our Swiss clients.

The successful candidates will join large project teams, working up to 30 man years communications systems. Each technical writer will report to his project manager. The main responsibilities will include working to tight time scales, on the preparation of documentation and literature on the implemented projects for user purposes.

Candidates must have a proven track record in technical writing, and be prepared to work on their own initiative, servicing the needs of the project development teams in a highly progressive company in the communications field.

Ref. CW 31/4

Systems Consultant

up to £7,500 + car

Systems Engineers

up to £7,000 + car

Slough Manchester

Exciting opportunities have arisen in a highly successful American corporation specialising in communications and information handling systems for high level support analysts.

Working in the nerve centre of a communications support team, successful candidates will be required to advise and trouble-shoot on our clients IBM Compatible Communications Hardware.

Excellent conditions of employment include travel in and out of the U.K., top relocations, expenses and financial aid for successful candidates with a background in Data Entry Systems, high level languages and a knowledge of a European language.

Ref. CW 31/5

Consider the benefits of . . .

- ★ Working for one of the most professional software houses in the U.K.
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Utilising your COBOL experience to date, working in a GCOS/TDS environment contributing to the success and professionalism of this member company of one of the largest international consultancy groups.

Ref CW 31/6

Chief Programmer

NW1 UP TO £8,000 p.a.

British Home Stores require a Chief Programmer for their Marylebone Road Head Office, to take control of a team of fifteen Application Programmers.

Apart from the day to day administration, other important aspects are to ensure that work is completed on time, and is technically sound, plus Recruitment and Training.

The successful applicant will also be expected to play a leading role in the implementation of improved programming techniques and interactive programme development.

The installation is an IBM 370/145, to which will shortly be added an IBM 3031.

Ideally candidates will have programming experience in an IBM environment, using ASSEMBLER, COBOL and DL/1.

This position will attract people who wish to combine a future in application programming and management responsibilities.

Ref. CW 31/7

RPG II or COBOL Programmers

Irish Midlands c. £6,000

Our client, a manufacturing company accessible to Dublin, requires experienced programmers for their up-to-date installation.

Our client requires a minimum of 2 years' programming experience in either RPGII or COBOL. Applicants will be given training where necessary. Systems experience awaits the successful programmer who has a good commercial manufacturing background.

The company offers these outstanding opportunities to secure very interesting work with great scope for the successful candidates who have the initiative to progress within an expanding organisation. In addition to a competitive salary and excellent working conditions on a new installation, there is a life assurance and pension scheme. Assistance will be given with relocation costs where applicable.

Write or telephone Dublin Office for further information.

Ref. CW 31/8

Consultants

Reading £6-£8,000 p.a.

A major international Software House require Consultants or Systems Analysts who have experience on Mainframe and Minis for their Reading office. You will be responsible for:

- ★ Advising clients upon their future computing requirements.
- ★ Ensuring that clients choose the hardware best suited to their needs.
- ★ Assessing the practical problems involved in implementing advance Computer Systems.
- ★ Working with clients to ensure that systems are installed successfully.

Therefore we are looking for experienced Systems Analysts who have the confidence to advance into consultancy work, and who can communicate effectively with senior management. You should also have experience in either General Accounting, Production Control or Distribution.

Ref. CW 31/9

طلبة من الأصل

CCC

Central Computing Consultants

KINGSTON: 44 Wood Street, Kingston upon Thames, Surrey, England. Telephone 01-549 3212. Telex 27950
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Middle East

Analyst Programmers
c £14,000 tax free plus benefits

Four analyst programmers are required for a new computer department being established at a leading motor distributor in Saudi Arabia, which is due to take delivery of an IBM 370/115 in March 1979. The systems will initially be a mixture of batch and on-line, running under CICS and DOS/VS and written in RPG II.

Benefits

- ★ Free furnished accommodation
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- ★ New DP department

Requirements

- ★ Solid systems and programming experience
- ★ At least 18 months' practical experience of CICS, DOS/VS, RPG
- ★ *Self motivation*
- ★ November start

Successful candidates will ideally have at least 18 months' practical experience of CICS, DOS/VS and RPG. There will be a high degree of user involvement and the positions will suit self starters. Experience of the distributive side of the motor trade would be an added advantage.

These positions are on bachelor status, enjoying the following benefits: 30 days' leave and 15 days' public holidays per annum. Free furnished accommodation of good standard with free electricity and water. *Free medical treatment and company car.*

FINAL CLIENT INTERVIEWS IN LONDON AUGUST 21-23
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QUALIFICATIONS:

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- Knowledge of O and M analysis
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PROGRAMMER/ANALYST

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THE REWARDS:

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The London Centre of the College now has vacancies on its lecturing staff. The work includes lecturing, tutoring, case studies, management games and teaching by correspondence. Lecturers spend about 35% of their time actually teaching and the rest in preparation, research, further education, etc.

Candidates (aged at least 26) should normally have a relevant academic or professional qualification and at least three years' experience. The work demands high teaching skill, and ability to collaborate in small teaching teams and undertake research or assignments. Successful candidates without significant teaching experience will be given training in instructional techniques.

Appointments will normally be for a period of five years but may be less, and in appropriate cases secondment for not less than two years may be considered. Salary starts at £6400 and rises to £8190.

For further details and an application form (to be returned by 25th August, 1978) write to Civil Service Commission, Alencon Link, Basingstoke, Hants RG21 1JB, or telephone Basingstoke (0256) 68551 (answering service operates outside office hours). **Please quote ref. G/888/73.**

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Senior Operator for new B800 installation shortly to become operational at our new Head Offices at Chipping Warden near Banbury, Oxon.

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August start. On-line banking system. CICS experience desirable.

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TRAINEE JUNIOR OPERATOR

required with four 'O' levels. Some shift work (evenings but no nights). Six weeks annual leave including bank holidays. Salary starting at £2,272 p.a. on incremental scale.

Please write giving full personal details to: Central Computing Services (CW), Birbeck College, Malet Street, London WC1E 7HX.

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COMPUTER WEEKLY

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SET YOUR SIGHTS HIGH – REACH THE TOP!

★ Why not consider moving to a more rural area-relaxed country atmosphere

★ Take a step up the ladder-Learn new techniques-improve your prospects

★ Increase your salary-consider the perks!

ANALYST PROGRAMMERS

HERTS

One of the country's leading retail organisations seeks analyst programmers to work at team leader level on the development of new batch, interactive and distributed systems. Company currently retain Burroughs B3700 · 4700 series hardware and are also investing in PDP 11 equipment. They seek persons with 2 years' exp in design analysis and/or programming (ANY LANGUAGE) to make a career with them

- ★ Universal opportunity to learn new languages and get on in MINI computers.
- ★ Significant user contact
- ★ RELOCATION expenses
- ★ Salary to £6150

REF. 1555

PROGRAMMERS

MIDDX

A major organisation in the retail trade is now pursuing further interests at a rapid rate. Retaining NCR Century equipment with new Criterion V8580 scheduled for delivery at the end of the year, they seek programmers with 3 years' COBOL experience on any machine for their major stock control systems utilising TOTAL database.

- ★ Plenty of new development work
- ★ Training in database
- ★ Sports and social club in beautiful ground, heated outdoor pool, squash court, etc.
- ★ Excellent perks — LVs, discounts on co. goods
- ★ Salary to £9250

REF. 185S

PROGRAMMERS

HOLLAND

Prestige world wide manufacturing company located in Amsterdam seeks programmers with minimum 2 years' COBOL & ASSEMBLER or PL/1 and Assembler experience to become involved in the development of sophisticated airline communications system.

Co. offers.

- ★ Excellent prospects for career path
- ★ Varied work of highly interesting nature
- ★ First-class perks including RELOCATION expenses
- ★ Salary range £11-£13000 neg.

REF. 1853

MINI PROGRAMMERS

HOLLAND & BELGIUM

We would like to hear from programmers on behalf of our clients, with good MINI exp. If you have had at least 2 years' experience of ASSEMBLER on any mini computer — contact us immediately to discuss on-going projects in the above countries.

- ★ Accommodation and expenses paid by the company
- ★ Renewable assignments
- ★ Excellent scope in a variety of areas
- ★ Salary £12000 neg A.A.E.

REF. 1603

CHIEF PROGRAMMER

LONDON

Our client, a major national retail organisation seeks a chief programmer to take control of 15 programmers. Company retains IBM 370 to which a 3031 will be added shortly. Ideal applicant will have at least 5 years' programming experience in an IBM environment using ASSEMBLER, COBOL, and DL/I. Job entails full management responsibilities and person will be expected to play a leading role in implementation for improved programming techniques.

Co offers

- ★ Progressive organisation
- ★ Flexible hours
- ★ Full scale of projects
- ★ Excellent fringe benefits which include free lunch and discount on company products
- ★ Salary to £9000

REF 1874

PROGRAMMER

SURREY

World leaders in their field, this organisation has an impressive varied range of business interests and is rapidly expanding. At their computer centre they have IBM 370, mini computers and additional new equipment scheduled, consequently needing programmers with min. 19 months' COBOL, ASSEMBLER or RPGII exp. to work as part of a project group.

- ★ Opportunity to go into analysis, with good scope for analysis
- ★ Fantastic working conditions, including large sports and social club
- ★ Paid overtime, flexi-time, Insurance cover
- ★ Subsidised staff restaurant
- ★ Salary to £S600.

REF. 1872

PROGRAMMER

MIDDX

One of the most significant forces in the computer services industry in the UK, our clients provide a comprehensive range of services to clients worldwide, retaining IBM 370 158 co. seek programmer with min. 19 months' COBOL and/or PL/1 exp. They offer:

- ★ Moves with programming into systems analysis of sales support or join one of their specialist groups
- ★ Chance to move on to MINI computers
- ★ Located within easy reach of London
- ★ Relocation expenses
- ★ Salary £5500

REF. 1451

IBM PROGRAMMERS

KENT

Our client, an international pharmaceutical company seeks programmers to join their rapidly expanding DP dept. They retain IBM 370 and require people with minimum of 12 months' COBOL exp. preferably under OS. Company offers excellent opportunities for movement into systems analysis, design and software support.

Co. offers.

- ★ Full training in TP and IMS Database
- ★ Flexi hours
- ★ Excellent facilities for career development
- ★ First-class perks which include sports and social club, sub. restaurant, pension and sick schemes.
- ★ Salary to £5500

REF. 1619

MINI PROGRAMMERS

LONDON

Prestige company operating on a global scale are recruiting persons with 1-3 years' experience on ANY MINI ASSEMBLER to work in their new modern city offices. Having large DEC PDP11 equipment and expanding at a rapid rate they have a wide range of on-going projects both in hardware and software areas

Co offers

- ★ *Extensive training in up-to-date technology*
- ★ Excellent career opportunities
- ★ Training in RSX11, RT11 and RSTS
- ★ Opportunity for future travel
- ★ Salary £5500

Ref. 1479

SYSTEMS ANALYST

LONDON

Our client, a prestigious Merchant Bankers are seeking a Systems Analyst who has financial/banking environment experience. They retain IBM 370 under OS but will consider other hardware experience. Co. offers

- ★ Full working benefits including subsidised mortgage
- ★ Excellent working environment
- ★ Job security with prestige concern
- ★ Salary £7500

REF 1S94

PROGRAMMERS

ESSEX

Management services division of major British group with annual turnover of almost £1,000m seeks COBOL programmer with minimum 2 years' IBM or ICL COBOL within a project team programmers will become involved in program design, coding, testing, documentation and maintenance as well as assistance in systems implementation. Co. offers.

- ★ Comprehensive range of applications
- ★ Opportunity to move to more advanced technical projects and a variety of languages and machines
- ★ Paid overtime — flexi hours — sub. restaurant, amongst many of the excellent perks
- ★ Relocation expenses
- ★ Salary to £5500

REF. 1824

JUNIOR PROGRAMMER

LONDON

Multi-national company retaining large IBM 370 hardware requires programmers with at least 12 months' ASSEMBLER experience to join highly professional team. They are currently developing a major sophisticated on-line systems Co. offers

- ★ Highly progressive organisation
- ★ Continued development with a well planned schedule
- ★ Good promotional prospects
- ★ Excellent benefits including cheap travel
- ★ Salary to £6000

REF. 1290

MINI PROGRAMMER

HANTS

Our client is a major British company with business interests in many areas. They seek programmers with at least 19 months' DEC PDP 11 and BASIC + experience. This hardware is newly installed and thus offers a chance to become involved in the development from the beginning. Co offers

- ★ Wide range of interesting and new projects
- ★ Flexible hours
- ★ Excellent career prospects
- ★ Annual bonus
- ★ Salary £8000

REF. 1586

SYSTEMS ENGINEER

W. GERMANY

Worldwide manufacturing company with offices in Frankfurt seeks engineer for sophisticated communications systems. Ideal applicant should have in-depth exp. of communications and message switching on any MINI. Good knowledge of GERMAN is essential. Co. offers

- ★ Relocation expenses
- ★ Good career prospects with excellent growth potential
- ★ Generous fringe benefits
- ★ Salary to £15000

REF. 1678

SENIOR PROGRAMMER

OXFORD

Our client is a major supplier of construction materials throughout the UK with turnover exceeding £200m. Running a modern computer centre and operating an ICL 1901T (upgrading shortly) they wish to appoint a Senior Programmer. Successful applicant will have comprehensive COBOL experience with PLAN and FILETAB an asset.

- ★ Working on own initiative with minimum of supervision
- ★ Opportunity to work in small friendly dept.
- ★ Relaxed picturesque surroundings not too far from the beautiful city of Oxford. (Due to location applicants should have own transport).
- ★ RELOCATION expenses will be negotiable
- ★ Salary to £6500

REF. 1678

ANALYST PROGRAMMER

WILTSHIRE

Our client a major preservation society based in rural Wiltshire have vacancies for analyst programmers with at least 18 months' RPGII experience. They are involved at present in taking over all major systems from their head office and have their development work planned for the next 5 years. Co. offers.

- ★ Variety of exciting new development work
- ★ BEAUTIFUL rural surroundings with very reasonable house prices
- ★ Generous RELOCATION assistance
- ★ Salary £5000

REF. 1837

For further details of the above positions and of the many others we have available in urban and rural areas — please ring our London office: 01-734 0152/3010.

Computing Services Association

CONTRACT DIVISION

OVERSEAS

MESSAGE SWITCHING BURROUGHS GEMCOS	HOLLAND	£450 p.w.
PDP FORTRAN	BELGIUM	£400 p.w.
HONEYWELL 6000 GCOS COBOL	BELGIUM	£ NEG
PDP RSX11M LONG CONTRACT	GERMANY	£ EXCELLENT
NCR 8200 IMOS COBOL	HOLLAND	£300 p.w.
PROGRAMMER PL/1 LONG CONTRACT	PARIS	£300 p.w.

U.K.

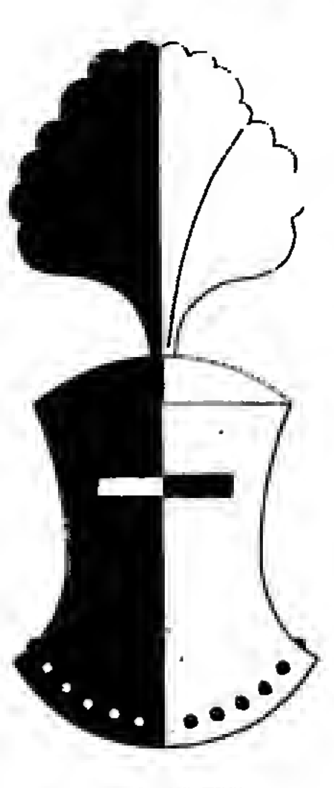
ANALYST PROG IMS COBOL	BEDS	£230 p.w.
IMS PROGS COBOL	HERTS	£260 + p.w.
PDP RSX11 FORTRAN	BERKS	£230 p.w.
SNR ANALYST DATABASE DESIGN	HERTS	£240 p.w.
BURROUGHS 6700 COBOL	SURREY	£200 p.w.
PDP RSTS/E BASIC +	HERTS	£200 p.w.
ANALYST PROGRAMMER IMS	HERTS	£230 p.w.
ICL COBOL GII	HERTS	£190 p.w.
820 IMOS COBOL	C. LONDON	£200 p.w.

Phone now for immediate and future contracts
Ring Christine Kay/David Hayton, 734 0152 (24 hrs.)

KNIGHT PROGRAMMING SUPPORT LIMITED

27 NOEL STREET, LONDON W1. TELEPHONE 01-734 0152/6 (24 HOURS)
OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM

Computing Services Association



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PROG IBM COBOL DL/I	MIDLANDS
SNR PROG IBM CICS ASSEMBLER	NORTH WEST & MIDLANDS
SYSTEMS ANALYST IMS DB/DC	NORTH WEST
DATABASE DESIGNERS ENGINEERING	NORTH WEST
SYSTEMS ANALYSTS FINANCIAL	SCOTLAND
PROG IBM PL/1 CICS	MIDLANDS
PROG HONEYWELL 66 IDS/TDS COBOL	NORTH WEST & MIDLANDS
PROG IBM OS COBOL	NORTH & MIDLANDS
PROG ICL 2960/2970 VMEB/K	YORKS
PROG UNIVAC 1108 COBOL	NORTH WEST & MIDLANDS
PROG ICL PLAN & COBOL	NORTH & MIDLANDS

FOR DETAILS OF THESE AND OTHER CONTRACTS, PLEASE CONTACT MR. PERRY BUTLER, 143-144 ROYAL EXCHANGE BUILDINGS, CROSS ST., MANCHESTER M2. TELEPHONE NO. 061-833 9341/3. MIDLANDS 021-236 1794 Extension 223

KNIGHT PROGRAMMING SUPPORT LIMITED

143 ROYAL EXCHANGE, MANCHESTER M2
OFFICES: AMSTERDAM, PARIS, BRUSSELS, LONDON, BIRMINGHAM

Computer Operators We talk your language.

George 3 or OS/VS1 – Salary range £4,000-£4,400 p.a. with valuable extra benefits.

When it comes to job satisfaction, it's worth talking to London Transport, the world's largest urban transport system.

At our rapidly expanding Data Processing Department in Central London, we're looking for more experienced staff with at least an 18-month background in George 3 or OS/VS1 operation.

As well as a salary in the range of £4,000-£4,400 p.a.; we can also offer other benefits:

- ✱ FREE TRAVEL on London Transport services at all times.
- ✱ Good holidays.
- ✱ Subsidised staff restaurant.
- ✱ Pension Scheme
- ✱ Excellent sports facilities

You will also be given excellent training with good promotional prospects.

The installation currently comprises 2 ICL 1904s, 2 ICL 2904s, IBM 370/148 and IBM Series 1 computers, handling Batch Processing, Transaction Processing, Interactive Processing and On-Line Enquiry systems.

So if you have the experience and ability we're looking for, telephone the Senior Operations Controller now, on 01-637 9144, or write to The Staff Appointments and Development Officer, 55 Broadway, London SW1H 0BD, quoting reference 915/C.

LONDON TRANSPORT

SYSTEMS PROGRAMMING

Yorkshire to £6500

DOS/VS
CICS
DL/1

Is this you?

Our client will offer, depending on experience and qualifications, up to £6500, and relocation where appropriate.

Write or telephone Ivor Norton, quoting reference C/78069, in confidence, at the address below.

Ivor Norton Management Services Ltd
P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel Harrogate 96628

SALES PERSON HOLLAND

As Europe's largest suppliers of contract computer personnel to Holland, we require an additional sales person for our Amsterdam office. The successful applicant will probably have some sales or marketing experience. However, consideration will be given to applicants with good computer experience, who have knowledge of Holland. He or she will be self-motivated and keen to travel. Remuneration will include generous guaranteed basic income, and a substantial commission. We will expect a successful person to earn in the range of £15-£25,000 p.a. A car will be supplied.

Please reply to:

The Directors
Knight Programming Support Ltd
27 Noel St, London W1
Telephone 01-734 0152 (24 hours)

LONDON SCHOOL OF ECONOMICS
SSRC STUDENTSHIP

COMPUTING IN THE SOCIAL SCIENCES

Applications are invited for a two-year studentship tenable from October, 1978, providing an opportunity for a student to read for the M.Phil. or Ph.D of London University. The research will be linked to the SSRC-financed Programme in Quantitative Economics under the direction of Professor J. D. Sargan, and will be concerned with applications of computing to Econometrics.

Candidates should have a good Honours or Masters degree in Computing with a Mathematics/Statistics background and an interest in Economics. Familiarity with numerical optimization/visual display would be an advantage.

Enquiries and requests for application forms should be addressed to the Secretary of the Graduate School at LSE, Houghton Street, Aldwych, WC2, at once. The deadline for receipt of completed application forms and academic references is 18th September.

LIVERPOOL POLYTECHNIC
DEPARTMENT OF MATHEMATICS

SENIOR PROGRAMMER

Grade T.4 (2 posts)

PROGRAMMER

Grade T1b/2 (1 post)

Qualified, experienced programmers to work with a team providing support to the Polytechnic teaching, research and administrative users of the Computer. 1903A-84K/disc, tape system is installed; the majority user work is COBOL, FORTRAN and PLAN together with packages of various types.

Salary scales
T4 £3,933-£4,320+£312 p.a.
T1b/2 £2,244-£3,339+£312 p.a.

Application forms and further particulars from the Personnel Office, Liverpool Polytechnic, Richmond House, 1 Rumford Place, Liverpool L3 9RH. Tel 051-227 5591, Ext. 43. Please quote reference GR/205. Closing date is fourteen days from the appearance of this advertisement.

ARE YOU EXPERIENCED IN DATA PROCESSING?

If you are, and you are also able to communicate, we would like to interview you. The job, lecturing in a private full-time College of Further Education. Salary c. £7,000 per annum. Subject areas *Management, Business Studies, Data Processing* Management, Computer Applications, Programming, Systems Analysis, Communications. Location: London and/or Oxford.

To apply send curriculum vitae to the Head of Computer Studies, St. Aldates College, Rose Place, Oxford OX1 1SB.

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Career Specialists and Consultants for

D.P. MANAGERS, SYSTEMS ANALYSTS, PROGRAMMERS AND OPERATORS

Midlands, Northern Counties and Scotland
For application forms apply to:
65 New Street, Birmingham B2 4DU. 021-643 0951
or Tel 01-723 5334

Senior Programmer

Up to £5000 per annum

We have a vacancy for a Senior Programmer at the Group's central data processing department in Basingstoke.

Our forward plans call for further extensions to our successful on-line order processing system, both geographically to complete a national network and in functional terms to offer more facilities to our users.

As a Senior Programmer working on this project you will be involved in designing, coding and implementing new sections of the system. The languages used are Assembler for on-line programs, and COBOL for batch work. You will need to have had good experience in these areas.

The system runs on a 1 megabyte IBM 370/148 under DOS/VS and Taskmaster, and currently supports over 75 VDU's in the Midlands and Southern England.

You will be working in the new Wiggins Teape headquarters in Basingstoke and fringe benefits include an excellent staff restaurant and relocation expenses which will be paid where appropriate.

For application form write to or ring:
R. H. Gould,
Personnel Services Manager,
Wiggins Teape Limited,
Gateway House, Basing View, Basingstoke,
Hampshire, RG21 2EE.
Telephone: Basingstoke 20262. Extension 3100.

Wiggins Teape Limited

Chief Programmer

Crawley, Sussex

A major international group seek an experienced person to fill this important computer vacancy at their Crawley Engineering Complex. The computer department supply a service to production, accounts, design and sales departments. DEC and Prime computers support 50 terminals in the offices and factory and in associated companies as well as Batch Processing services.

The successful applicant will supervise and schedule programming within the department and be responsible for establishing and supervising programming standards and disciplines. It is essential that the job holder has a sound education to degree standard, followed by six to ten years' experience of data processing, part of which should have been in a supervisory capacity.

An attractive salary and relocation package, if applicable, is being offered.

For further details of the job, salary, and company please contact:

David Golton
Senior Personnel Officer
APV Co. Ltd.
P.O. Box 4, Manor Royal
Crawley, Sussex
Telephone: Crawley 0293 27777

APV

Computer Programmer

The programmer appointed will join a team providing the Institute with high level programming support for a variety of problems associated with physiological and psychological research. Programs are usually written in FORTRAN. Training in more advanced techniques can be given. Candidates should have a Degree/HND/HNC in an appropriate discipline and should be conversant with operating system principles. Appointment as Higher Scientific Officer (£4100–£5450) or Scientific Officer (£2840–£4410) according to qualifications and experience. Promotion prospects. Non-contributory pension scheme.

For further details and application form (to be returned by 25 August 1978) write to Ministry of Defence, CM(S)1b3, Room 310, Savoy Hill House, Savoy Hill, Strand, London, WC2R 0BX. *Please quote ref: SA/36/EM.*

Science Group
CIVIL SERVICE

Computer Operations Production Manager

Manchester

c £8000 (including Shift Allowance)

The current job holder is transferring to ICL South Africa so an excellent career opportunity has arisen with ICL in Manchester.

As Production Manager you would be totally accountable whilst on shift for providing an effective computer service to users in a high pressure development environment. You must be able to recruit, develop, train and lead a team of shift staff and ensure that they are fully motivated and competent.

You will be required to establish and maintain liaison with all user groups as well as the Engineering Division, so you will have to be capable of creating good working relationships.

The man or woman we are looking for should have wide experience of computer operations and sufficient maturity and experience to get the best out of people. It is unlikely that anyone under 25 years old will have the required skills. We are operating a three shift, five day week operation on 1900 and 2900 Series machines, with a large communications network.

For more information ring Helen C. Ralston (Senior Personnel Officer) on Stoke-on-Trent (0782) 29681 ext 3277. Alternatively write to her quoting reference CW1943 at ICL, West Avenue, Kidsgrove, Stoke-on-Trent ST7 1TL.

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MYRIAD

PROJECT RESPONSIBILITY

SENIOR ANALYST / PROGRAMMER WEST OF LONDON

Salary to £6,250

Excellent Relocation Expenses

Our Client is developing several on-line real-time applications on an IBM 370/158 computer using IMS and DC/DB software. Several new systems are scheduled for development in both financial and production applications areas. The Company, an engineering organisation employing over 1,500 staff, offer excellent conditions of employment. These include five weeks holiday and an active sports and social club.

This is an excellent opening for a Senior Programmer or Analyst/Programmer to take responsibility for systems from investigation through to successful implementation using advanced software techniques. Applicants will have a sound educational background together with a minimum of two years programming in COBOL. Some analysis involvement is desirable although a keenness to extend both technical and analysis skills is of prime importance.

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:– 30 Fleet Street London EC4Y 1AA **01-353 0981 (24 hrs)**

ANALYST PROGRAMMER

PERTH, SCOTLAND

JOHN DEWAR & SONS, LIMITED
SCOTCH WHISKY BLENDERS AND BOTTLERS

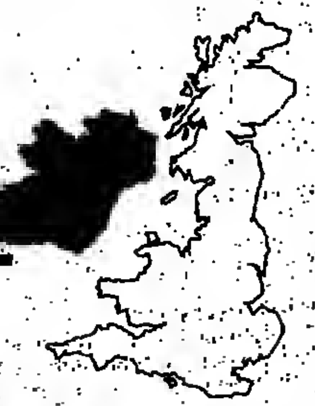
REQUIRE an analyst/programmer to work at their Scottish Office.

THE JOB involves working in a small team on the specification and implementation of systems on a Honeywell Series 200 Computer, covering a wide range of business applications.
A depth study is currently being carried out to determine the company's hardware requirements for the 1980's.

APPLICATIONS are invited for the above post from persons with a minimum of three years' programming experience, preferably in COBOL. Experience of Honeywell computers, although not essential, would be an advantage.

Write for an application form to the:
Systems Manager,
John Dewar & Sons Limited
Inveralmond
PERTH.

IRISH RECRUITMENT FEATURE



Advertisers are reminded that the next Computer Weekly area feature will be published on August 24 and will highlight career opportunities in Ireland.

Space reservations should be made as soon as possible to:

Owen Kelly — Manchester — 061-872 4211
Eddie Farrell — London — 01-261 8097

Copy Deadline: PM Friday before

COMPUTER WEEKLY

THE INDUSTRY'S WIDEST READ AND MOST REQUESTED NEWSPAPER

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antler

senior programmer

Bury

salary good

Antler is one of the world's leading luggage manufacturers, with their Headquarters and Data Processing department centred in Bury, Lancashire. The company is currently embarking on a policy of diversification, which will further enhance its position in the world market.

The Data Processing department runs a Univac 90/30 and their five year development plan includes the development of production systems based on a large production database, and will also bring a number of other sites on-line to the 90/30 at Bury.

They currently have a vacancy for a Senior Programmer with a real opportunity for the right person to progress in a technically advanced field. Candidates must have a minimum of three to four years Cobol in a commercial environment, and experience of Database and communications techniques would be a distinct advantage, although training can be given in these areas.

This is a tremendous opportunity to progress quickly in an advanced and challenging environment, and the successful candidate will therefore be well rewarded, including being given assistance with relocation where necessary.

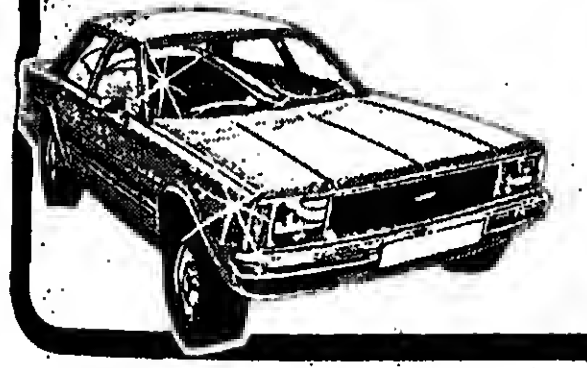
For further details contact: Peter Smith or Ruth Cayley, 061-928 8302.
Ashley House, Ashley Road, Altrincham
WA14 2DB. Tel. 061-928 8302

QUADRANT
RECRUITMENT
LIMITED

Senior Programmer/Analyst

Hertz U.K.

A multi-national company in the travel/leisure industry.



The position is based in Norbury, SW16 and would suit an experienced, self-motivated computer programmer, aged 20–30 years. Someone with knowledge of COBOL, Assembler and IBM operating systems.

Excellent prospects and interesting work in challenging fast-moving and professional environment.

If you are interested, please write or phone giving details of your previous experience, age and present salary to:

Miss P. King,
Hertz (U.K.) Limited,
Radnor House, 1272 London Rd,
Norbury SW16 4DQ
Tel: 01 679 1777

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HARLAND AND WOLFF LIMITED

SYSTEMS AND PROGRAMMING MANAGER

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Harland and Wolff Limited is the largest single employer in N. Ireland, and has an in-house systems and computer services department. The IBM 370/138 operates under DOS/VS and has a large teleprocessing system supporting on-line user applications and program development.

THE WORKLOAD:
We already have a very wide range of business applications in our comprehensive management information system, but are still very much in a development phase.

THE DEPARTMENT:
Our development staff comprise about 30 analysts and programmers in 3 applications teams, each under its own supervisor.

THE PERSON WE SEEK:
We offer a major career opportunity for a competent senior manager with good project control experience and the ability to work with senior executives of the company in the formulation of development plans for their departments. Also an asset would be good teleprocessing and database experience.

INTERESTED?
An attractive salary will be offered to the right person.
Please apply in the first instance, to:

STAFF PERSONNEL MANAGER
CENTRAL PERSONNEL DEPARTMENT
HARLAND AND WOLFF LIMITED
QUEEN'S ISLAND
BELFAST BT3 9DU

Please quote reference number O on the envelope.

SHAPE TECHNICAL CENTRE

The Hague, Netherlands

A NATO research establishment, has vacancies on its international staff for

A. COMPUTER APPLICATIONS SCIENTIST

DG 78.336 TAX-FREE*

Directs, guides and co-ordinates all activities of a group of 4-8 programmers and provides professional level contributions as a software engineer to a wide variety of challenging projects in the areas of mathematical programming, scientific applications programming, and software systems development primarily in support of other divisions of the Centre; carries out independent computer science research in one or more areas related to the Centre's mission.

B. ANALYST/PROGRAMMER

DG 55.512 TAX-FREE*

As a senior team member provides professional level contribution to the work of the Centre in the fields of programming and software engineering as applied to the design and development of mini computer based systems. Experience with programming interactive graphics applications is highly desirable.

QUALIFICATIONS AND EXPERIENCE

Post A: Applicants should possess a Bachelor's level degree in Mathematics, Computer Science or a closely related subject. A higher degree in one of these subjects is extremely desirable. Should be able to show progressively responsible professional experience in the fields of computer analysis and applications programming applied to technical and scientific problems spanning a period of at least 7 years. Supervisory or project leader experience is also essential. The contract to be offered will be for three years and is renewable.

Post B: Minimum education requirement is a university level degree (e.g. Bachelor) preferably in a Computer Science, Mathematics or Engineering. 3 to 5 years experience including experience in problem analysis and programming.

Official working language at the SHAPE Technical Centre is English.

*Gross annual salary married officials DG 88,092 (post A); DG 60,300 (post B).

Candidates who are nationals of one of the NATO countries are invited to send full details of training, experience and personal data to Personnel Officer, SHAPE Technical Centre, P.O. Box 174, 2501 CD The Hague, Netherlands.

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Programmers-Analysts...

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Telephone: 01-491 4706.
Please send me an application form:

Name ....

Address ....

....

....

Phone No: ....

Knight

01-491 4706

Staff Services Division of BOC Datasolve Group and a member of Computing Services Association.

your kind of jobs,
your kind of people.

هكذا من الأصل

AUSTRALIA

Management Application Systems P/L, a software consulting company, is urgently seeking experienced EDP personnel on behalf of ourselves and a number of clients in various industries. The positions are in Sydney and Melbourne and some are offering paid air fares to Australia for successful applicants who are able to relocate at an early date.

6 PROGRAMMERS

LOCATION: MELBOURNE

A large company using an IBM 370/145 under OS requires competent programmers on 12 and 24 months contract basis with opportunity for continual employment available after contract period.

Qualifications:

- At least 3 years programming experience
- At least 2 years' IBM OS COBOL programming experience
- Recognised diploma or degree in computing
- Applicants will desirably have experience in any of the following
  - programming experience in another language — ASSEMBLER, PL1, FORTRAN, TABN/TAB 160
  - experience with interactive timesharing — TSO
  - Database applications — IMS
  - Prior experience in ICL 1904A GEORGE 2 or 2+

Remuneration
- return air fare UK-Melbourne
- initial accommodation
- 4 weeks' annual leave
- salary — minimum $13,000 depending on experience
- nine day (70 HR) fortnight.

Applications will be considered only from people who definitely intend to go to Australia.

The above (and other positions) offer participation in challenging and interesting projects under pleasant working conditions. The successful applicants will be given all possible assistance in relocating and settling in Australia.

We will be interviewing applicants in London from 8/8/78.

Written applications with detailed résumé (and telephone no. for personal contact) should be submitted to: R. M. Blythe, c/o M. Bratherton, Heskyns Ltd., 145 St. John's Street, London, EC1.

Shift Control Clerk

From £4722 to £5219 with possible progression to £5802 after 6 months

Assistance given with legal fees and removal expenses where appropriate

Applicants should have at least one year's experience in a Control environment plus a good working knowledge of OS JCL. Availability for three-shift working is essential.
Conditions of service are excellent and carry all the benefits of working within Local Government.
The organisation provides computer services to a consortium of four London Boroughs. The computer centre is situated in modern offices at Enfield and current equipment is a 3-megabyte IBM 370/158.
Further details from Norman Bennett on Ext. 230.

Application forms from:
Mrs. B. Dorrington
LOLA (London On-Line
Local Authorities)
Tower Point North
Sydney Road
Enfield
Middlesex EN2 8UE
Tel. 01-366 6611
(Ext. 276)

LOLA

County Surveyor's Department

ASSISTANT ENGINEER (COMPUTER SERVICES)

Grade AP3/4 — Salary up to £4632 (inclusive of supplement)

Required to provide guidance to Engineers on using *Computer Packages, particularly through terminal facilities.* Present Computer ICL 1904 S running under George III to be replaced in near future by Honeywell Level 66.

Applicants should be educated to HNC standard in either Engineering, Mathematics or Computer Science. Experience in Engineering and/or Computer Applications would be an advantage.

Assistance with removal expenses up to a maximum of £50.

Further information and application form from the County Surveyor, Shire Hall, Gloucester. Closing date August 21, 1978.

Gloucestershire County Council

Opportunities for

SENIOR SYSTEMS ANALYST & SYSTEMS ANALYSTS

to be involved in Mini Computer Development in West London

The Customer Service Minicomputer Development Centre of North Thames Gas is based in *pleasant premises in Acton, West London and is easily accessible by most forms of transport.*
We have exciting career opportunities at two levels: firstly for a SENIOR SYSTEMS ANALYST to develop a real-time Customer Service Computer system running on Data General C330 minicomputers.
Ideally you will need at least 2-3 years' successful experience in implementing systems in a commercial environment. You will be responsible for the definition of system requirements in collaboration with user staff at all levels, and for supervising a small team of Systems Analysts designing, specifying and testing the required system.
We also need a small number of SYSTEMS ANALYSTS with a background in programming involving at least one year's experience in a commercial systems environment. If you wish to widen your systems experience then a new career with North Thames Gas could be a wise move.
For the SSA post, the salary range is £5098 to £6493 including supplements, and for the SA positions £4717-£5515 including supplements. The many additional benefits include 21 days holiday entitlement and first-rate sports and social club.
Take a positive career step forward by telephoning Richard Toombs, Systems Manager, Mini-Computers on 01-993 0914 for an informal discussion or telephone our Recruitment & Selection Officer on Staines (81) 61666 extension 3282 and ask for an application form quoting Reference E9108 for the SSA or E9082 for the SA.

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Data Prep Programmer with at least two years experience to work with a leading English Mail Order company and liaise with its French office on a variety of projects. Good salary and opportunity for advancement in a growing company. Write in confidence with details of experience to date to:

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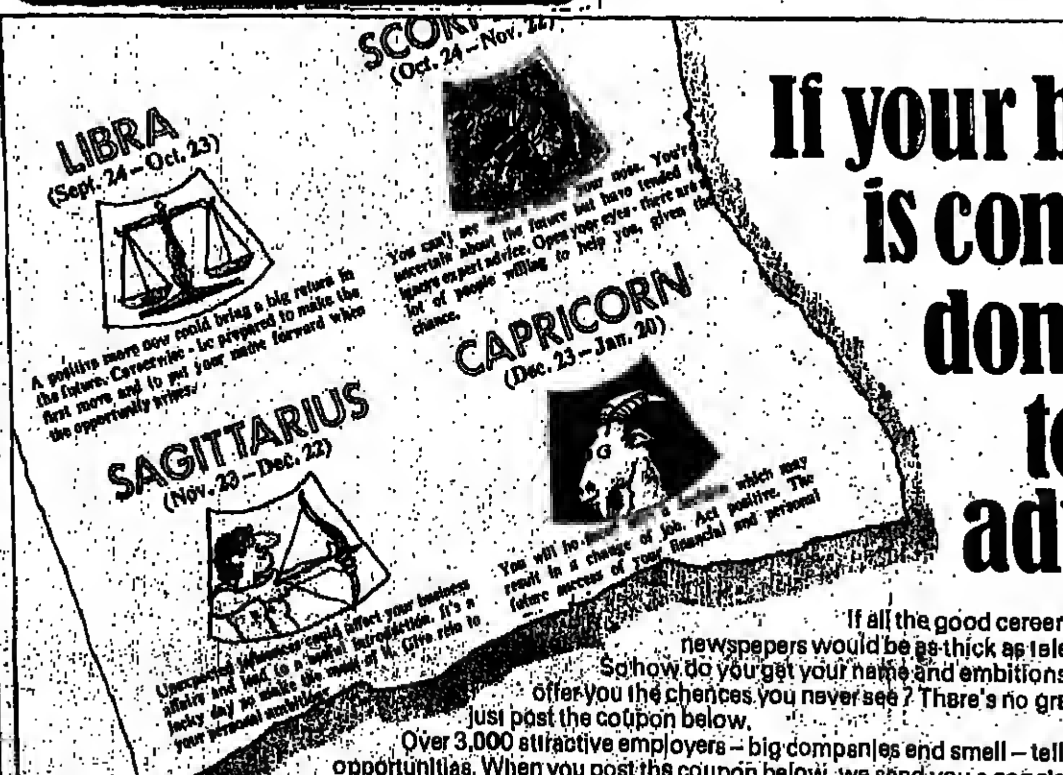
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LIBRA (Sept. 24–Oct. 23)
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Wrangler, one of the world's leading manufacturers of leisure wear, want to offer an interesting job to an enthusiastic professional who has at least 1-2 years' systems and programming experience in a commercial environment. You must have a knowledge of Cobol or RPG and any experience of on-line systems could be a possible advantage.

You will join *a small EDP team at our Head Office and Distribution* Centre in Calverton and have the opportunity to become very involved in the activities of the site. The Company has an IBM System 3 and knowledge of this hardware would be useful.
Men or women interested in this position should telephone or write for an application form to

Mr. Alan J. Osborn, Personnel Manager
BLUE BELL APPAREL LIMITED
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SHAPE TECHNICAL CENTRE

The Hague, Netherlands

This NATO research establishment has the above vacancies on its staff to work on analysis, program design, coding and other programming activities needed to develop applications programs, using modern software engineering tools and methods.

Specific application areas are scientific computation, data management, real-time mini-computer systems and interactive graphics. The Senior Assistant Programmer and the Assistant Programmer are also involved in simulation systems and systems programming.

Official working language at the SHAPE Technical Centre is English.

QUALIFICATIONS

The minimum education requirement for these posts is GCE 'A' level or equivalent.

Post A: at least five years relevant experience. Design experience on at least one major application. Indepth experience with several higher level languages and/or assembler language.

Post B/C: at least three years (post B) and one year (post C) relevant experience in higher level language and/or assembler.

*Gross salary married officials DG 46,700 (post A), DG 41,800 (post B), DG 36,100 (post C)

Applicants (NATO nationals only) should send a brief personal resumé to Personnel Officer, SHAPE Technical Centre, P.O. Box 174, 2501 CD The Hague, Netherlands.

Chief Programmer

Crawley, Sussex

A major international group seek an experienced person to fill this *important computer vacancy at their* Crawley Engineering Complex. The computer department supply a service to production, accounts, design and sales departments. DEC and Prime computers support 60 terminals in the offices and factory and in associated companies as well as Batch Processing services.

The successful applicant will supervise and schedule programming within the department and be responsible for establishing and supervising programming standards and disciplines. It is essential that the job holder has a sound education to degree standard, followed by six to ten years' experience of data processing, part of which should have been in a supervisory capacity.

An attractive salary and relocation package, if applicable, is being offered.

For further details of the job, salary, and company please contact:

David Golton
Senior Personnel Officer
APV Co. Ltd.,
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Manor Royal, Crawley
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POSITION	SALARY	EMPLOYER	LOCATION	HARDWARE ENVIRONMENT	SOME OF THE QUALIFICATIONS	REF. NO.
PL/1/COBOL Analyst/ Programmers	to £6,000 +	Bureau/Manufacturer	N. London Berks.	IBM	Ambitious programmers with 2 years' + experience required to work on varied commercial projects in an on-line environment.	31/1
Analysts/ Technical Support Staff	to £8,000 +	Manufacturer	Berks. + travel	Minis	Computer professionals with client liaison experience required to join this successful organisation to provide *technical/software support to clients.*	31/2
Programmers	to £6,000	Finance	Berks.	ICL + Minis	Programmers with 2 years' + commercial experience and preferably COBOL required to develop both batch and terminal systems for this growing organisation.	31/3
RPG II Programmers	to £6,000 + expenses	*Software House*	London & Home Counties	IBM	Urgently required. System 3, 32, 34. RPG II programmers to work on development projects for this well established organisation.	31/4
Programmers and Graduates	to £5,500	Engineering Consultancy	Surrey	Any	Excellent opportunities for people with some FORTRAN experience to develop engineering applications and software. Training facilities are provided.	31/5
Analyst/ Programmers	to £12,000 Tax free + Accom. ++	Construction Industry	Saudi Arabia	IBM DOS	Analyst/programmers with 3 years' + experience of RPG II/COBOL urgently required to work for this international organisation in their Middle East Headquarters.	31/6
Software Specialists	to £7,000	Manufacturer	Berks.	Minis/ Micros	D.P. professionals with 3 years' + experience of commercial software systems and knowledge of COBOL/RPG II and Assembler required to work in a stimulating environment.	31/7
Systems Analysts	to £7,000	Transport Industry	London	IBM	Analysts with experience of major commercial systems required to work in a DB/TP environment. Excellent career prospects.	31/8
Systems/ Customer Support	to £8,000	Manufacturer	London EC1	Small business systems	Excellent opportunity for people with experience of RPG II and client liaison to join a *new team covering all aspects of* technical support.	31/9
Scientific/ Engineering Programmers	A1 neg.	Bureau/ Consultancy	Holland	Minis	1 year + contracts available to scientific/technical people with 3 years' + experience on preferably DG, HP or DEC machines to work in an engineering consultancy environment.	31/10
Analysts & Programmers	£6,000 + Mortgage	Banking	London EC3	IBM DOS	This rapidly expanding organisation requires systems and programming staff with 2 years' + relevant experience to assist in the development of on-line/real time systems.	31/11
Technical/ Scientific Programmers	to £7,000 +	Technical Consultancy	London & SE	Minis/ Micros	Varied and exciting development projects available for scientific/technical programmers with 2 years' + Assembler/Fortran/CORAL experience.	31/12
Programmers/ Designers	to £6,000	Chemical Industry	Middx.	IBM OS	Programmers with sound COBOL experience and team leadership experience required to develop TP & DB systems in this expanding organisation.	31/13
Analyst/ Programmers/ Analysts	to £7,000	Software House	London W1	Minis	Staff urgently required with commercial experience on minis or on-line systems and communications software. Excellent career prospects.	31/14
Programmers/ Analysts	to £6,000 +	Banking Services	City	PDP	Excellent opportunities for programmers with a sound DP background to develop real time communications systems in a banking environment.	31/15
Analyst/ Programmers	to £6,000 +	Software House	London + Travel	Any	*Analyst/programmers with 3 years' + experience required to* join this progressive company to work on a wide variety of commercial and scientific projects.	31/16
CAD/CAM Graphics/ Communication Staff	c. 60,000 guilders +	Service Industry	Holland based	Minis/ Micros	Excellent career prospects for the right candidates to provide consultancy/programming services throughout Europe.	31/17
COBOL Programmers	to £6,500 +	Software House	Surrey + Overseas	Any mainframe	This rapidly expanding organisation urgently requires good COBOL programmers with preferably knowledge of 2 mainframes to develop systems within the UK and Europe.	31/18
Systems Analysts	to £6,000 +	Manufacturing/ Distribution	W. London	IBM & Minis	First Class opportunity for analysts with 6 months' + experience to develop commercial systems in a challenging environment.	31/19
COBOL Programmers	to £8,000	Insurance	London EC	Any	A1 opportunity for COBOL programmers with 1 year + experience to work on batch/real time projects within this progressive company.	31/20
Analyst/ Programmers & Programmers	to £6,300 + benefits	Manufacturing & Marketing	*N. Surrey*	Minis & IBM	Experienced analyst/programmers and programmers required to work in this exciting environment on a wide variety of on-line and batch applications.	31/21
Junior & Senior Programmers	to £6,000	Electronics Industry	Surrey	Minis/ Mainframes	Excellent opportunity for ambitious people at all levels to work on advanced technical/scientific applications. Graduates also required.	31/22
Software Designers/ Programmers	to £7,000	Publishing	London	PDP	If you have 2 years + experience in real time communications, software or minicomputers, there are excellent *opportunities within this company's computer department.*	31/23

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You will be expected to demonstrate the following levels of experience and ability:—

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2. You will possess sound programming experience, preferably on IBM hardware under DOS/VS.
3. The ability to communicate well with user management at all levels.

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n Analyst who has worked as part of a team in developing banking applications will be considered. This is a challenging opportunity and as ch only applicants who possess the desire to progress their careers within a very professional environment should apply.

eference will be given to candidates who are under 30 years of age, married and without children of school age.

WRITE OR TELEPHONE US NOW AS WE WISH TO MAKE EARLY ARRANGEMENTS FOR YOU TO ATTEND AN INTERVIEW, WHICH CAN TAKE PLACE EITHER IN LONDON OR THE SOUTH

COLAISTE NA HOLLSCOILE CORCAIGH
UNIVERSITY COLLEGE, CORK

INFORMATION & DOCUMENTATION OFFICER

In the Computer Bureau

Applications for the above post are invited from Technical authors or Systems Analysts with experience of documentation systems and standards.

The Computer Bureau provides a comprehensive computer service for academic and administrative departments within the College. Interactive computing facilities are supported by an IBM 370/158 Computer.

The Information and Documentation Officer will be responsible for all aspects of documentation systems and standards. This includes the establishment and control of a DP Systems Library, the preparation of newsletters and reports for internal and external distribution.

Preference will be given to candidates who have had previous experience in the design, implementation and maintenance of documentation systems in a major installation.

The successful candidate may be offered a fixed-term contract or a permanent position.

SALARY: Depending on qualifications and experience, will be within the scales:

£5897 × 5 — £6784 (Grade 6)
or £4747 × 8 — £5853 (Grade 5)

Further particulars and application form may be obtained from the Establishment Officer, University College, Cork, Ireland.

CLOSING DATE for completed applications **Wednesday, August 30, 1978.**

AUSTRALIA

SYSTEMS ANALYST

We are the service company for the Australian banks national credit card scheme — Bankcard.

Our Systems Manager is visiting Britain during the second half of September. He would be interested to meet Systems Analysts who are considering emigrating to Australia. (Our offices are in the Sydney area.)

If you have spent more than 5 years in EDP, with some proven Systems Analysis experience with batch applications, please airmail a résumé to reach me by the end of August.

We operate twin IBM 370 equipment in both batch and real-time modes. Network applications are front-ended through PDP minis.

We shall negotiate attractive salaries and benefits for the right applicants.

Please send résumés to:

Allan Smith, Senior Systems Analyst
CHARGE CARD SERVICES LIMITED
P.O. Box 73
Auburn, N.S.W. 2144, Australia

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It's with a big company offering solid career prospects and good perks. Ref. 348.

SHIFT LEADER £4700

IBM 370: DOS VS/POWER
You'll need two years' experience for this famous East London based manufacturer. Outstanding prospects and perks that include 4 weeks' hols and a staff restaurant. Ref. 334.

AMBITIOUS PDP 11 OPERATOR £4000

Exceptional prospects await you in Central London. You should have a knowledge of RSTS
Perks include 4 weeks' hols and cheap meals. Ref. 178.

PROGRAMMERS

PROGRAMMER/ANALYST c. £5300 +

If you have at least three years' COBOL experience with an IBM background, or you are a technical Programmer looking for a change, this West End based installation offers you a challenging job coupled with generous benefits. Ref. 353.

COBOL/BASIC PROGRAMMER c £4,500

Based in Kings Cross, this Company operates a PDP system, mainly on-line with some batch processing.
Career prospects are second to none and perks include five weeks' hols, pension scheme, LVs and a subsidised canteen. Ref. 352.

SYSTEMS ANALYSTS £6200

COBOL PROGRAMMER £5000

You'll need a minimum of one year's experience for either job, gained in a commercial installation, and preferably have a knowledge of IBM. The Programming position offers the chance to learn RPG 2 together with on-line and database techniques. Slough based. Ref. 365.

ANALYST PROGRAMMERS c £7500

For a software house Home Counties based, but offering the chance to work in Europe. You should have a background in either Communications, Micro Processors, Military Systems, Minis or Basic Software. Prospects are limitless with benefits to match. Ref. 358.

RPG II PROGRAMMERS £4500

For a West London installation consisting of a 96K System/3 Model 12, soon to be increased. The job is with a major international company offering outstanding prospects and perks. Ref. 354.

SENIOR PROGRAMMERS £4850 +

The job is with a major Hertfordshire/Essex based Retailer, currently installing a new Data communication network system, based on PDP 11. You should have around 3 years' experience (any language) and be looking for the chance to learn COBOL or Basic + 2. Benefits include relocation expenses where necessary. Ref. 356.

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POSITION: Applicants should have a minimum of one year's experience with Assembler, preferably in an industrial environment. Ability to communicate effectively with users is essential.

Our pleasant offices are situated in Perivale with car-parking facilities available and we offer a full range of employee benefits.

Please write or phone: **Personnel Department, Perivale-Gütermann Ltd., 22 Wadsworth Road, Greenford, Middlesex. Tel. 01-998 5000.**

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Our clients, a medium sized Software House well respected in the industry and having particular expertise in the field of manufacturing systems, require a person to head their systems team taking projects from feasibility to implementation. The role will include a large amount of contact with the user and personality and the ability to negotiate from a technical point of view are vital.

Ideally the person should have come through a programming background and be able to take systems down to program specification level. The position will be largely concerned with overall systems and project control and proven experience in this area is expected.

We would regard this as an important step for a person who is ambitious and we think this could be your opportunity.

The environment they have is happy and secure. The company is expanding and your career is assured, especially for those people who like their talents to be recognised.

Telephone or write to us now so that immediate interviews can be arranged either in London or the South.

UNIVERSITY OF ABERDEEN
COMPUTING CENTRE

PROGRAMMING ADVISER

The University has recently installed a large Honeywell dual processor 66/80 System supporting a large terminal network. The Centre has a major interest in Data Base Management which includes the support of applications using IDS/II, software development and research.

Applications are invited for the post of Programming Adviser in the Applications Section which is concerned with assisting users and developing packages. Candidates should normally possess an honours degree in Science or Mathematics and have computing experience in one of the following areas: data management, data analysis, text processing.

Salary on the scale £3,660-£6,178 per annum (Grade 1A-Other Related Staff) with appropriate processing.

Further particulars from the Secretary, The University, Aberdeen, with whom applications (Two copies) should be lodged by September 1, 1978.

UNIVERSITY OF BIRMINGHAM
FACULTY OF COMMERCE AND SOCIAL SCIENCE
Department of Economics

RESEARCH FELLOW (RANGE 1A) IN COMPUTING

Applications are invited for an S.S.R.C. supported Research Fellowship (Range 1A) in computing in the Department of Economics for appointment from October 1, 1978.

The Research Fellow will be concerned with the development of software including programmes for algebraic manipulation on a CDC 7600. Candidates should, therefore, be well qualified in computer science and have a good knowledge of numerical analysis.

The appointment will be for 18 months from October 1, 1978. Salary on the first five points of the Research Fellow scale (£3660-£4601) plus superannuation.

Further particulars and application form from the Assistant Registrar (Commerce), University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, to whom the form, naming three referees, should be returned by Friday, August 25, 1978, quoting reference C/201/FF.

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Applicants should be experienced in Fortran, with good mathematical background and preferably engineering experience.

Please contact:

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LK TOOL COMPANY LIMITED
East Midlands Airport
Castle Donington, Derby
Telephone: Derby 811349

Programmer

Gresham Lion Limited is a well-established name in electronics engineering, with an extensive range of products varying from small O.E.M. units to complex defence systems for the Ministry of Defence.

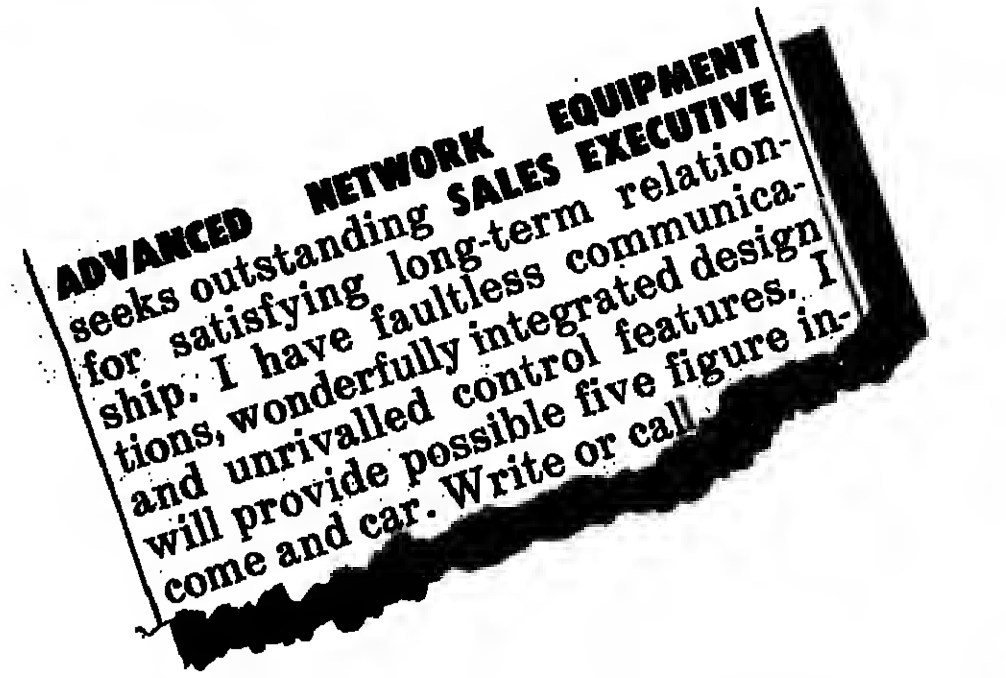
We are now looking for someone in their early 20's with experience of PDP-11 machines, using Fortran IV and real-time operating systems, preferably RSX-11M.

The successful candidate can expect to earn a good salary with numerous fringe benefits that usually apply to a successful company.

Applications should be forwarded to R. G. Hancock, Personnel Manager, Gresham Lion Limited, Gresham House, Twickenham Road, Feltham, Middlesex. Tel. 01-894 5611.

Gresham Lion Limited

Data Communications



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INTERTEL equipment is marketed in the UK by Raytheon Cossor Data Systems. User reaction is enthusiastic and sales are rising fast. That is why we need experienced and energetic Sales Executives to develop the market further. Candidates should have the experience of selling or supporting the sales of relevant data communications or terminal products. They must be enthusiastic about the rapidly-changing field of data communications, highly self-sufficient, and mobile.

We offer an excellent basic salary together with commission which will take the annual earnings to over £10,000. A car and competitive benefits will be provided.

Write, or telephone for an application form, to: *W D Barrow, Raytheon Cossor Data Systems, The Pinnacles, Harlow, Essex CM19 5BB. Telephone (0279) 26862.*

Raytheon Cossor Data Systems

UNIVERSITY OF KENT AT CANTERBURY
COMPUTING LABORATORY

PROGRAMMER

The Computing Laboratory needs a Programmer to join its team of Programmers who are responsible for maintaining and developing both the VME/K operating system used on the University ICL 2960 computer and the communications software developed by the University to link a number of PDP-11 computers to the main frame.

It is expected that the person appointed will be a graduate or of equivalent status and should have a sound knowledge of a high level language.

The post is tenable for two years from October 1, 1978. The current salary for a Programmer is £3660-£6178 p.a. Grade 1A.

Application forms and further particulars may be obtained from H. R. Clayton, Senior Assistant Registrar, The Registry, The University, Canterbury CT2 7NZ (Telephone Canterbury 66822 Ext. 283), quoting reference A28/78. The closing date is 31 August, 1978.

TERMINAL OPERATOR

Data Processing Department

Occidental, one of the most progressive and successful oil companies in the North Sea, have a small, highly-skilled team of Computer Specialists, who play a significant role in providing technical and commercial data processing services to the entire operation.

We are looking for an experienced person to operate two identical Remote Batch Computer Terminals. The decollating and distribution of printer output, the ordering and receiving of computer terminal supplies, and the logging of machine failures and the co-ordinating of engineering repairs are also included as the main areas of responsibility in this vital data processing position.

It is desirable that the candidates, male or female, are familiar with IBM OS/VS1 remote entry subsystem commands, and are willing to work occasional overtime.

A competitive salary is offered, and fringe benefits will include free life insurance, contributory pension scheme, generous luncheon allowance, 4 weeks' holiday and local public holidays.

If you have the necessary qualifications and experience and are seeking a challenging and rewarding career with a forward looking Company, please apply in writing, or telephone for application form to: Mrs. Linda Booth, Employee Relations Department, Occidental Petroleum, Caledonia Limited, 127 Causewayend, Aberdeen AB2 3TP.
Tel: Aberdeen 574588.

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If you have hardware or software sales experience OR you have a more technical background but would welcome the opportunity to move into the sales environment then contact

Ken Jackson
Safe Computing Ltd.
20 Freeschool Lane
Leicester, LE1 4FY
Telephone: Leicester (0553) 29321

ANALYST/ PROGRAMMERS

Our associated company Amphenol-Tuchel Electronics G M B H requires Analyst/Programmers to work at their Heilbronn plant.

Around 3 years COBOL experience required (preferably on Honeywell 64) in a manufacturing environment. Spoken German is desirable but is not an essential requirement.

Heilbronn is situated on the River Neckar, in pleasant countryside, near Stuttgart.

U.K. interviews will be conducted during the second week in September.

Please apply with full career details to.

The Secretary, Amphenol Limited
Thanet Way
Whitstable, Kent CT5 3JF

AMPHENOL Connect up with Amphenol

Senior Data Processing Officer—Teleprocessing

Salary Scale £6773-£7223 per annum

Applications are invited from suitably qualified persons for the above position. At its London Headquarters, the Authority operates two IBM 370/148 Computers connected to a large (150 terminal) teleprocessing network covering the principal centres of population in the Region.

Interesting developments in this network are in hand involving the evaluation of IBM's Series/1 and similar equipment.

The software environment is VM with DOS/VS, OS/VS1 and CMS. The teleprocessing monitor is SHADOW with TP programs written in IBM Assembler. Batch work is handled almost entirely by Informatics' MARK IV file management system.

The successful candidate will be responsible for the maintenance and further development of the TWA SHADOW teleprocessing network. He or she must have been involved in depth with the implementation of at least one major teleprocessing system and be fully conversant with the characteristics of IBM's communication hardware.

This post is open to male and female applicants

24 days holiday (minimum) per annum.

Pension scheme — Interchange arrangements.

Please send your application, giving full details of age, educational qualifications, previous experience and present post quoting reference 78/84 CW or not later than August 14 to

Laurence D. Wild
C.Eng., F.I.C.E., F.I. Mech.E., F.I.W.E.S.
Divisional Manager
Room 850
Thames Water Authority
Metropolitan Water Division
173 Rosebery Avenue E.C.1

Thames Water

UNIVERSITY OF NEWCASTLE UPON TYNE
NORTHUMBRIAN UNIVERSITIES MULTIPLE ACCESS COMPUTER

TEMPORARY PROGRAMMING ADVISER

Applications are invited from graduates to join a small group within the NUMAC computing service concerned with advising, teaching and providing documentation on the use of computer programs of a statistical nature. Applicants should have a good knowledge of computational statistics and an understanding and sympathy with research workers and students in the social sciences. The Computing Laboratory has excellent facilities including powerful IBM hardware with interactive capability and a large repertoire of library programs.

The appointment will be for one year and will be made on one of the following scales according to age, qualifications and experience Range 1A £3,660-£6,178 or Range II: £5,730-£7,308 per annum. Membership of the appropriate University superannuation scheme will be required.

Further particulars may be obtained from the Registrar, The University, 6 Kensington Terrace, Newcastle upon Tyne, NE1 7RU, with whom applications (3 copies) together with the names and addresses of three referees should be lodged not later than 25th August, 1978. Please quote reference CW.

The British Library

HEAD OF SYSTEMS DEVELOPMENT
Bibliographical Services Division

The Division maintains an extensive range of services to the Library and to the information community in the UK and overseas. It is currently developing its own software, MERLIN, which is a total database management system, based on a new range of ICL 2900 equipment.

The successful candidate's responsibilities will include the planning, organisation and day-to-day control of systems and programming development: project planning in conjunction with user departments; arranging visits, lectures and seminars; and ensuring that proposed enhancements to British Library software are technically and financially viable.

Candidates, aged at least 28, must have a sound knowledge of, and experience in, at least one of the following, large scale data-base systems, communications, software, bibliographical on-line and batch systems and new range ICL 2900 computers.

Inner London starting salary, as Assistant Keeper First Class, will be within the range £5855 - £8820. Non-contributory pension scheme.

For further details and an application form (to be returned by 24th August, 1978) write to:

Civil Service Commission, Alencon Link, Basingstoke, Hants RG21 1JB, or telephone Basingstoke (0256) 68551 (answering service operates outside office hours). **Please quote ref. G(37)382.**

BL

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The New Business Sector handles amongst other equipment the most successful range of small to medium-sized computer systems ever designed and produced in Europe, winning awards for product design and export achievement. The organisation has invested large sums of money in providing education and training, preventive and remedial engineering as well as excellent software support and implementation services. We believe this to be vital for successful selling.

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★ A desire to sell in a new business environment
★ Ability to communicate with top level management
★ Ambition and self-motivation

Not only does our Client offer an excellent basic package which could be as high as £15,000 (commission is payable over and above the guarantee), but there is also a professional management structure with a well designed career path. The normal benefits attributed to a major organisation together with a very generous car allowance.

Interested applicants should contact Roy Highfield and interviews will be arranged as soon as possible.

Ref. CW 18/1

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THE SALES BIT

More than one way of making a point

WE are all at risk to the vagaries of inter-person communications. We are all emotional beings despite the exteriors we present to the world. We are as if in a post-box, looking out through the slit, insecure and secretive, needing to be liked and wanting to be right.

When people communicate to us by voice or by letter we unconsciously carry out our own interpretation upon it which varies in extremes, depending on our emotional state at the time. The same words can veer from pleasing to offensive, depending on our state of mind. It is so easy to "get the wrong end of the stick" because of a gesture, a look, intonation or the semantics of language.

If this reflects the potential attitude of the recipient, then there is obviously some value in the other party considering the possible effect of a communication, before it is transmitted. There is always more than one way of making any statement; a point can always be made without causing offence.

From the salesman's point of view, it is essential to anticipate the effect of every communication, particularly when using the telephone. There are many situations where it is important for him not to say exactly what he thinks because to do so would be destructive.

It is often the salesman's best strategy to make a point against himself when he feels like making one against his client. The responses to "I don't understand" could be many.

1. "I'll go through it again."
2. "It's quite simple really."
3. "You weren't listening."
4. "What! All of it?"

When the salesman turns it against himself and says something like "I'm sorry, I didn't put it as clearly as I should have," he makes a real contribution towards developing an empathetic environment for negotiation.

Take another example, "Our payroll is unique."

1. "No it isn't."
2. "That's what they all say."
3. "What makes you think that?"
4. "We could always bend the package for you."

To contradict is destructive and unnecessary. It is far better for the salesman to agree, then qualify the statement. "I imagine it is rather complex, but if we could utilise some of our standard program modules for tax tables and so on, it would reduce system costs."

One often sees the inconsiderate use of language at work in the communications between management and subordinates.

"You have failed!" is so much more destructive than "You have not enjoyed the success we know you are capable of." The same thing really, only different; except that one demotivates, the other challenges.

We had an excellent candidate in the office the other day I have known for years as a most effective salesman. He asked us to find him a new job, despite his enthusiasm for his company and its product, simply because, after many years of over-performance, his manager told him he had failed. Their loss is someone else's gain, simply as a result of someone saying exactly what they thought at the time without considering its truth in the context of the past performance and its emotional effect on the recipient.

This week's tip. Do not engage mouth before switching on brain.

TRADER

Control standard

FIRST of a new series of standards for use in the evaluation of industrial process control instrumentation, has been published by the British Standards Institution. Entitled BS 5558, *Methods of evaluating the performance of controllers with analogue signals for use in industrial process control*, it will enable manufacturers and users to assess their equipment and express the results in a consistent and internationally acceptable manner. BS 5558 may be obtained from BSI Sales Department, 101 Pentonville Road, London N1 9ND. Price £7.80.

Distributor

CACHE buffer memory systems, made by Fabri-Tek for the PDP-11, are now to be distributed by Billing Machines Ltd, under the terms of a recently signed agreement. BML has been handling a range of PDP-11 peripherals and peripheral sub-systems for the past five years.

Sticky labels

CONTINUOUS self-adhesive labels for use with computers are now being manufactured by Stampiton Labels of Whaley Bridge, Stockport. The firm plans to have a range of standard size labels always in stock.

Prime offices

NEW headquarters have been set up by Prime Computer in the UK. Its address is Prime Computer (UK) Ltd, The Hounslow Centre, Lampton Road, Hounslow, TW3 1JB. Tel: 01-572 6241.

THE former Stanford Research Institute, now called SRI International, has moved its London office to 5th Floor, 24 Buckingham Gate, SW1E 6LB. The California-based consultancy's main European office remains at 12/16 Addiscombe Road, Croydon.

Puzzle answer

THE first two sequences are digital, and chronological respectively. ATGCLVLSSCAP gives the 12 Zodiac Signs in correct astrological order: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, Pisces.